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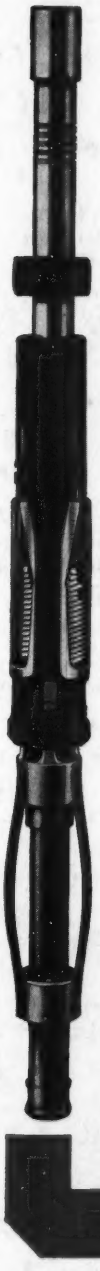
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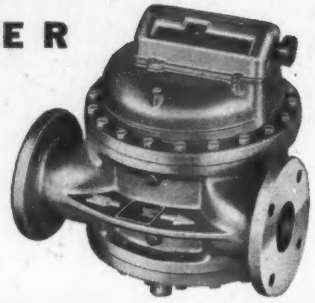

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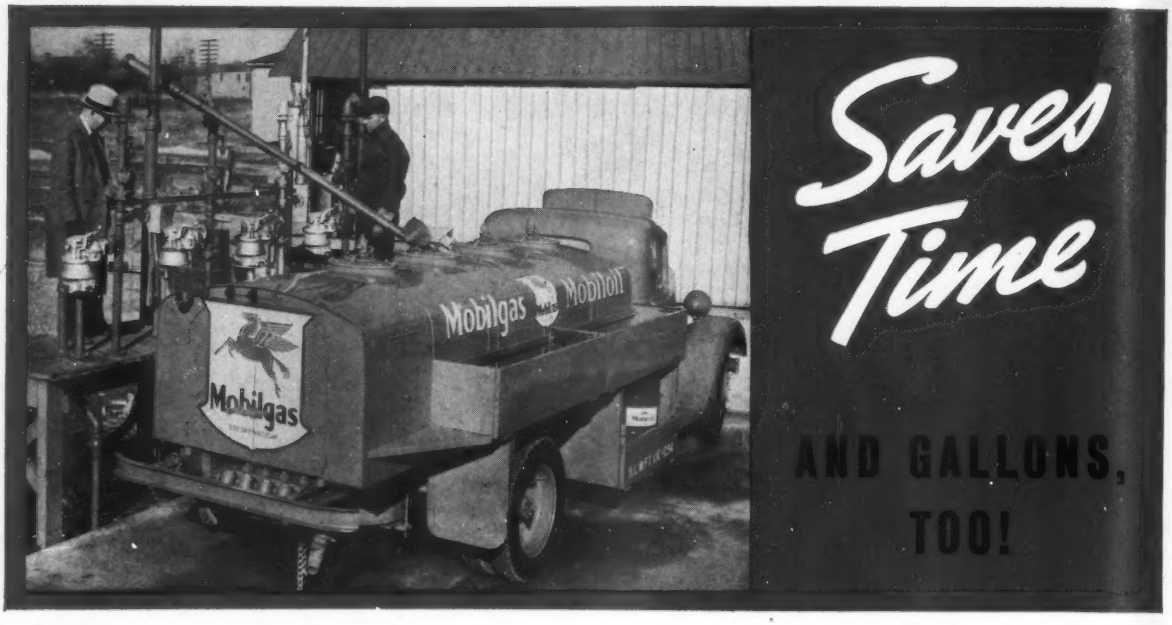

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CALIFORNIA
OIL WORLD
and Petroleum Industry

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IN THIS ISSUE

Safety In Natural Gasoline Plants 2

Fact Finding Committee Report 8

Advancement In Understanding Absorption 14

Production and Development 16

Laugh This Off 18

San Joaquin Valley Development 20

L. A. Basin A.P.I. Draws Capacity Crowd 24

Los Angeles Basin Development 25

Coastal District Development 27

Crude Oil Production 31

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March 23, 1939

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Safety in Natural Gasoline Plants Advanced

Considerably in Past Six Years

By W. Shellshear, Gilmore-Dabney, Inc.*

Safety in natural gasoline plants has advanced considerably during the past few years, and the industry has been free from serious fires and accidents for five or six years. We believe that this has been largely due to continued improvement in the design and construction of new plants; the operation of codes in preventing unsafe practices; the work of the insurances companies in seeing that these codes are being followed; and last, but not least, intelligent education of natural gasoline plant men.

Natural gasoline plants, once considered a formidable hazard, are now being run with as great a degree of safety as any other industrial plants. Every man in these plants should be educated with a knowledge of the hazards with which he is surrounded and the handling of any problem in which these hazards are involved.

This education should go beyond safety consideration, it should go right into the economical and efficient operation of the plant. Flow sheets, illustrating the path of fluids in plant operation should be made available. This is especially important where the lines are underground. They should also include detailed descriptions of any new modifications or alterations. It is important that every operator understands these drawings and knows where indicated lines and valves are located in the plant.

Regular safety meetings composed of the plant personnel will keep the idea of safety continually in their minds. The personnel should be encouraged to report unsafe conditions and to make constructive suggestions. Special training in this regard is now available by the California Petroleum Safety Board, Inc., under A. J. Martinson.

Safety Valves

The safety relief valve is the most important mechanical protective device in our gasoline plants. Every vessel or line containing volatile fluid which can be "closed in" should have adequate safety valve protection. The term adequate protection, when referred to pressure vessels, means ability of the safety equipment to remove excess vapors which are formed in emergencies without allowing the pressure to rise to a dangerous point.

*Presented at the March regular monthly meeting of the California Natural Gasoline Association. The California Oil World is the association's official publication.

[1]California Oil World, Second Issue, March, 1938, page 18.

Most pressure vessel failures that occur in gasoline plants are caused from excessive static pressure rather than from combustion explosions such as might occur in a compressed air line.

W. Shellshear

This was illustrated a few years ago when a fire burned for some hours around a group of gasoline tanks. Very little damage was done to the gasoline tanks because they were provided with ample relief capacity. As a general rule absorbers have relief valves designed to handle the maximum gas capacity at a pressure not greater than 10% above the normal working pressure.

The question arises, "What pressure vessels require safety valves?" The intermediate scrubbers in a compressor plant are well protected by the cylinder relief valves. We would question the need of additional safety valves. The absorber can be "closed in" and therefore should be protected by safety valves against vapor expansion due to heat from the sun or the emergency of a fire.

Safety valves should be set to operate at the proper pressure by the manufacturer or by a certified inspector. The adjustment is then sealed to prevent tampering. They should be pulled periodically to prevent their sticking in one position and be thoroughly inspected to see that they are working freely at least once a year.

Their adjustment should not be interfered with except by an authorized person.

In the case of boilers or pressure vessels which can be cut out of service at any time, and whose vapors are not dangerous, safety valves should be directly connected with the vessel without an intervening stop valve as directed in the various codes.

Stills, absorbers, or other pressure vessels in plant operation present quite a different problem for the following reasons:

1. No spares are provided and if a safety valve leaks badly, it presents a menace.
2. Any rise of pressure in an absorption system is usually cared for at one or more other points.

In vessels of this type our committee recommends:

a. A three-way three-port "tank switching" valve as illustrated on page 3 may be installed between the safety valve or valves and the vessel so that one valve may be removed without shutting in the vessel and adequate valve protection still be maintained.

   The plug of a "tank switching valve" is so designed that it is impossible to put the bull end of the valve off from either of the inside ports.

b. One or more safety valves so assembled that there is a stop valve or rising stem valve between each safety valve and the pressure vessel.

   The intermediate valve is sealed open and the safety valve set by a certified inspector. These valves cannot be touched by any one else except by the foreman of the plant in a case of extreme emergency. We believe that the intermediate valve should preferably be a modern plug valve, but the handle must show whether the valve is open or shut by being permanently fixed to the plug.

If relief valves are connected to tanks containing vapor without an intermediate valve and leak badly, what is to be done?

We answered the question in one of our plants some time back by screwing a second pop valve on to the first. They remained this way for some months until we had a chance to shut down the plant and fix them. The point is, that unless "a" or "b" is followed, the only times that the safety valves will ever be inspected will be the rare occasions when the plants shut down.

Safety valves should discharge their vapors vertically into the air at a height at least ten feet above the ground, with a small vent at the bot-

tom of the pipe to prevent it becoming full of condensate. Sensitive pilot operated back pressure regulators have supplemented one of the pop valves in some of the new plants. This affords much greater relief capacity per dollar invested. It also results in smoother operation.

Pressure Tanks. Pressure tanks should be designed according to code instructions. Properly guyed or self-supporting foundations should be provided for vessels that might be affected by earthquake and connections should be made flexible enough to take up the shock. For gasoline storage tanks 360 degree bends have been found suitable. Under normal conditions with a gas free from sulphur, the amount of internal corrosion in natural gasoline plants is very small.

This is particularly the case with absorbers, stills, and other vessels handling absorption oil. Stabilizers, which handle gasoline with only faint traces of water are also free from corrosion. Tanks in which water is being separated from gasoline, such as gasoline run down and storage tanks will show slight corrosion due to the solvent action of the pure water. They should be inspected every few years. An inhibitor paint is suggested to retard this form of corrosion. External corrosion should not be overlooked, especially in the case of insulated tanks.

If the gas contains sulphur compounds, they should be eliminated as far as possible from the gas before it enters the plant by means of iron oxide purifiers or equivalent. In reclaiming the absorption oil, but not cooling it below 200 degrees F. after distilling, any remaining sulphur compounds picked up by the absorption oil can be removed and the corrosive effects on the equipment kept at a minimum. In testing to find out whether internal corrosion has reached a dangerous point in a tank, a "telltale" is often used. The shell of the tank is bored to the point where corrosion allowance starts, at the water line or some other place on the shell where corrosion is expected to occur. In this hole is threaded a small tube and a valve. If the vessel has corroded past the corrosion tolerance, on opening the valve, fluid will pass out. When a tank needs to be inspected for corrosion, it should be completely blanked off from all outside sources of liquid or vapor.

If the director shows a dangerous atmosphere, an air line mask must be used. The man entering the tank shall be fastened to a rope by means of a special harness which will allow him to be lifted out of the tank without injury should he become unconscious or unable to get out by himself. At least four men are necessary for this procedure, one to enter the tank wearing the mask with the rope attached to his harness, a second to hold the rope, a third to operate the blower, and a fourth to observe all conditions and be ready for emergencies.

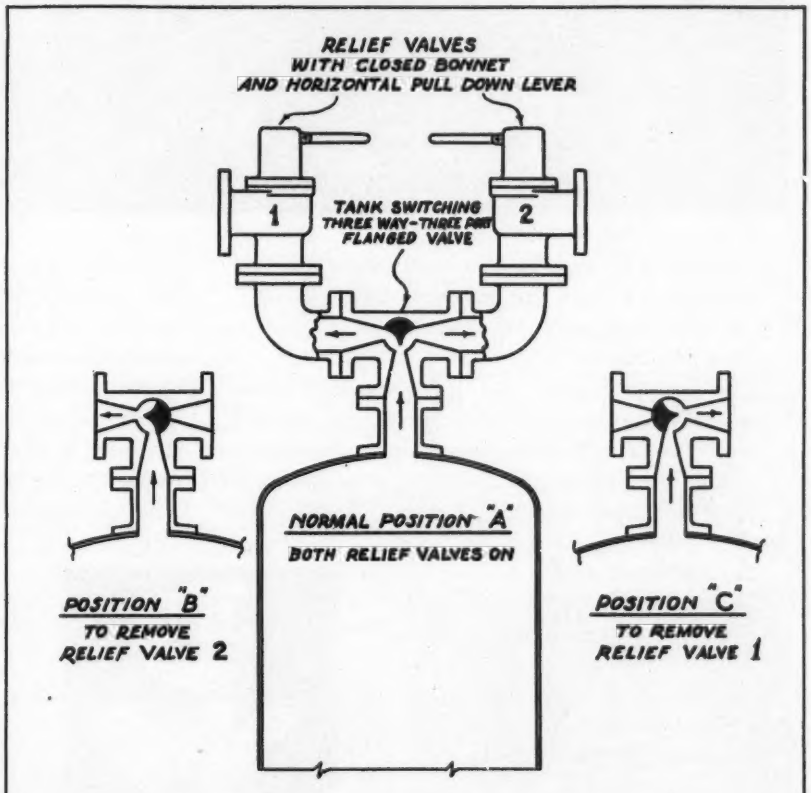
The man holding the rope should be able to observe the man in the tank at all times.

Pipe, valves, and fittings. Pipe corrosion is one of the greatest maintenance items which the gasoline plant operator has to face as well as being a definite hazard. For this reason as many pipe lines as possible should be above the ground, even if foundations have to be raised for this purpose. This provides for detection of leaks, ease of maintenance and tracing of flow. Expansion and contraction due to temperature and free movement due to earthquake shocks is more readily permitted.

Where pipes are below the ground, they should be in concrete pits. These pits should be baffled at intervals to prevent gasoline, oil, or vapors spreading a possible fire from one part of the plant to another. Liquid drains should also be provided for the pipe trenches. Steel valves and fittings should be used in all lines carrying inflammable fluids.

Electrical hazards. To prevent ignition in gaseous locations all electric wiring and fittings should bear the "Underwriter Laboratory" approval as vapor and explosion proof. Flashlights should also be vapor proof. Underground electric conduits should be marked so that they can be distinguished from other lines. Grave dangers can be caused by electric light extension cords if not maintained in first class condition. Three wire extension cords for drop lights and electrical tools should be used with special receptacles and plugs. The third wire grounds the tool and prevents the man operating it from being injured by a short circuit.

Where extension cords are used for



SUGGESTED INSTALLATION OF
THREE WAY-THREE PORT VALVE
FOR VAPOR RELIEF VALVES
TO FACILITATE REPAIR OF RELIEF VALVES
WITHOUT SHUT DOWN

3-28-38.

Simplicity in natural gasoline plant design is an economic factor capable of producing profits for operators ... for *simplicity is the sworn enemy of all waste in materials, time and space!*

Illustrative of this fact, the photograph above shows a bank of six absorbers which, from outward appearances have little to distinguish them from other types. Yet, the application of plant simplification to their design has resulted in the development of a new and unique vessel. Each actually is a combination of five separate vessels ... an inlet scrubber, a 16 plate absorber, an intermediate scrubber, a gas dehydration unit consisting of four calcium chloride brine contactor plates and an outlet scrubber ... *all housed within a single shell.*

Thus, simplicity in plant design has here eliminated six outside vessels, the added cost of their foundations and the initial cost, maintenance charges, depreciation and ultimate replacement cost of the required attendant piping. Through the reduction of the necessary plant yard area, plant operating efficiency has been increased, operating costs reduced to the minimum; plant inspection and vessel maintenance have been simplified.

Again we emphasize the fact that, to no small degree, plant profits can be made or lost on the draughting board and again we offer you the profit-producing knowledge and experience that directly results from engineering and erecting natural gasoline plants for our clientele.

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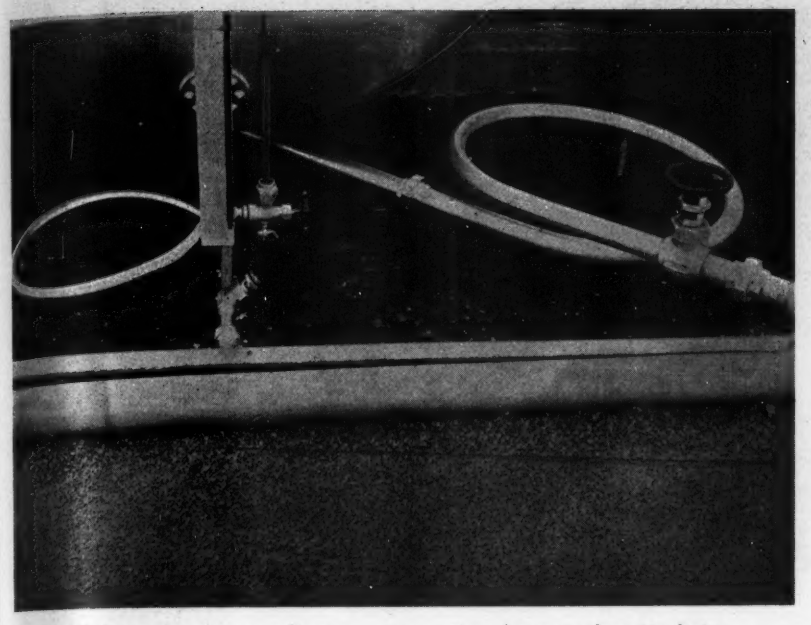


360 degree bend on gasoline pump connection also on tank water drain.

lighting the interior of pressure vessels, the committee strongly recommends the use of a six-volts light circuit obtained from a special transformer.

Electric lamps should not be screwed in or out of sockets while the circuit is closed. A new type of cord plug locks in place in the socket until the circuit is opened. Do not use electric drills for drilling into lines containing gas or gasoline vapor. The committee suggests that operators give more consideration to pneumatic tools for plant maintenance.

Static electricity can be built up by playing a stream of water on the interior of a tank. For this reason, when washing a tank, the nozzle of the hose should be grounded to the tank. Loading racks should be provided with copper wires and clamps for properly grounding trucks and trailers. Engine ignition systems including spark plugs, wiring distributors, etc., should be made as vapor proof as possible and the possibility of short circuiting and sparking should be guarded against. This danger is reduced by the use of low tension magnetos with high tension coils as near as possible to the spark plugs.

In hazardous locations explosion proof motors should be used.

Welding. Special precautions need to be taken in welding in gasoline plants to prevent accidents and only experienced welders should be used. In considering the hazards of welding, the following facts are pertinent.

It requires from 5 to 15% of natural gas to cause an explosion with air, but the normal gasoline range is as low as 1½ to 6%, the higher the gravity of the product, the lower the explosive range. A gallon of gasoline of approximately 35 cubic feet, when vaporized, will, if completely turned into vapor, render about 2000 cubic feet of air highly explosive. The interesting feature is the large volume of air which can be rendered dangerous by admixture of a very small amount of gasoline vapor. Gasoline vapor is over twice as heavy as air and consequently, if weather conditions are favorable, will readily travel quite a distance close to the ground and the rate of flame propagation is so high that anyone standing between the point of ignition and the bulk of the liquid is liable to be seriously burned. A case of this kind happened some time back at Signal Hill. A break occurred in a gasoline line and gasoline vapors travelled in a circuitous route to a boiler fire box some 250 feet away in a direct line. The vapors were ignited and flashed back to the break and the man who was working off to one side, not in the direct path between the boiler and the line break was so severely burned that he died within 24 hours.

When tanks which have held oil or gasoline are to be repaired by welding, after being blanked off or otherwise disconnected from all sources of oil or gas, their contents should be entirely removed. They should then be steamed for two hours or more, the time depending on the type of vessel and the vapor test whether positive or otherwise. If there are trays in the tank, it may be necessary to overflow the tank with boiling water till all oil or gasoline is removed before steaming. The important point is that steam should be passing through the tank all the time that welding is in progress. Care must be taken that the tank is not distorted by local overheating.

When welding inside a plant, special precautions should be taken. Carbon dioxide extinguishers and water hoses should be ready for emergencies. Wet sacks should be used to cover all places where gasoline vapor is liable to escape and a spray of water should be played on falling sparks from torch. The risks are minimized if the housekeeping of the plant is good. When welding to lines or vessels, operations do not need to be disturbed as a hot tap can be made. When, however, gas lines need to be repaired, it is necessary to blank them off. If this can not be accomplished, reduce pressure at the point of welding by hot tapping on both sides and blowing gas to air. Each case presents a different problem. The important thing is, that the pressure must be as near to atmosphere as possible before welding takes place. Pressure must be built up by gas if a vacuum line is being cut. Most valves leak slightly and not too much reliance should be placed on them to cut off gas from welding operations. Pits around pipe lines must be carefully tested for gas vapors before a welding torch is lighted inside them for making line repairs. Gas vapors can come out of the ground if there is a bad leak in the vicinity. Lighted lanterns have caused many fires in the past. In some places lighted lanterns have been discarded and white barricades used in their place. Leaks in pressure lines are dangerous and should be promptly attended to.

The committee recommends the following method:

Have on hand patches cut from pipes ranging from 2-in. to 12-in. in diameter. Use coiled asbestos rope with shellac in place of gasket and jack patch on to pipe with jack and chains. Under certain conditions it may be necessary to use an hydraulic jack to obtain sufficient pressure. Weld patch on to pipe when con-

Illustrating the use of jacks for repairing line leaks. A joint is made with asbestos wicking and shellac. The iron plate is then placed on top and pressure applied by jack. The joint is then welded.

venient. For finding leaks in vacuum lines a stethoscope is useful as the sound of the gas being sucked in can often be heard for some distance if it is placed on the line.

Storage and handling of gasoline. Storage tanks should be so equipped that overfilling of one tank will provide an overflow into one or more of the others, but a 10% vapor space should be maintained in the tank at all times. Self closing spring loaded valves should be used for drawing water off at the lowest point of the tank. Each tank may be conveniently connected to a header leading to a receiver at a slightly lower elevation. As the tank is filling, the water may be removed from the small receiver, keeping the main tanks at all times free of water. Automatic gauge cocks of the ball check type made of steel should be used, and still fittings throughout. Area around storage tanks should be graded so that any leak of gasoline can be drained away. Although some city ordinances require walls around storage tanks to hold 120% of their capacity, the hazard caused by allowing high vapor pressure gasoline to accumulate around storage tanks is very great and this should only be done if there is no other safe way to handle the product. For, after all, it is easier to remove the fuel than to fight fire. Each tank may be protected by permanent overhead water sprays controlled by one quick opening master valve to keep the tanks cool in case of fire. Each tank should have two or more nozzle type spring loaded safety valves and at least one vacuum relief valve. Frangible discs or safety heads may also be used to supplement the safety valves in case of a rapid rise of pressure. Released vapors should be removed to a safe place. Normal relief of vapors from storage tanks should be accomplished by a back pressure regulator to relieve excess pressure in the gathering system and a reducing regulator to equalize and replace displaced liquid.

Hazard prevention. Much thought is required in the design and operation of plants to reduce hazards as much as possible. The work of the various codes along these lines has taken a big load off the minds of natural gasoline men. There are, however, other methods of accident prevention. One of the most important of these is inspection. Regular inspection of equipment for a corrosion and mechanical defects cannot be overstressed. These inspections increase the efficiency of operation and set a high standard for the care and maintenance of all types of equipment.

While we are inspecting our tanks, however, let us make sure that the pipe lines under our feet are not ready to break away due to excessive corrosion and flood the plant with oil or gasoline. After being in use for some years, pipe lines in a plant should be dug up, inspected, and repaired if necessary. If you wait for a pipe to leak, it may leak in such a place that you cannot repair it without shutting down the plant. In regards to routine engine inspection, let us call your attention to Mr. De Forest's paper on the subject of Magnaflux,[1] given at our operator's night one year ago.

In regard to fire, the maintenance of all first aid and fire fighting equipment on an efficient basis is essential. Laboratory fires should be eliminated as far as possible by having laboratory sinks for disposal of gasoline samples with a vapor tight cover. An 1/8-inch pipe connected to the plant vacuum lines will remove all vapors. Good housekeeping will also help to reduce the fire hazard, and allow greater freedom for fighting the fire.

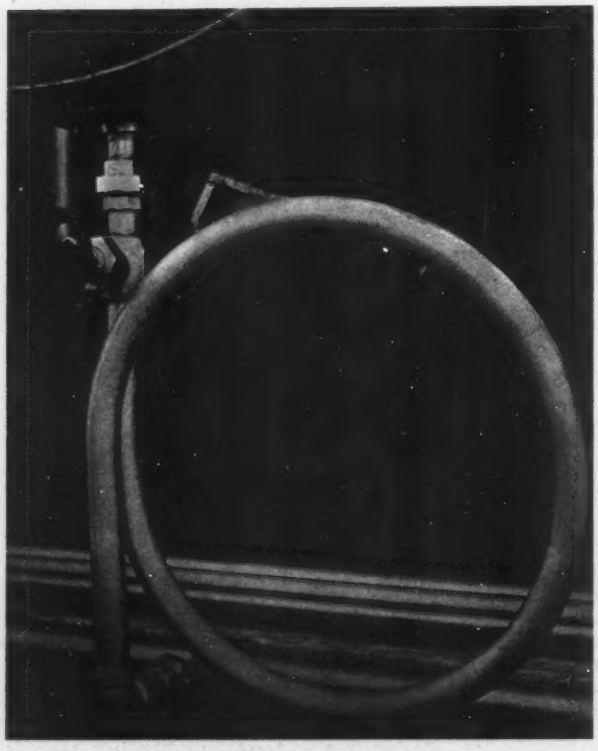
When bleeding pressure vessels, vapor hazards can be reduced by using two lines, one a main line to carry away the product and the other a small one for slight drainage.

Explosions should be prevented by regular draining of air compression systems and care should be exercised in introducing explosive materials into vessels partially or wholly filled with air.

Equipment should be standardized at plants so that it can effectively handle the hazard it must guard.

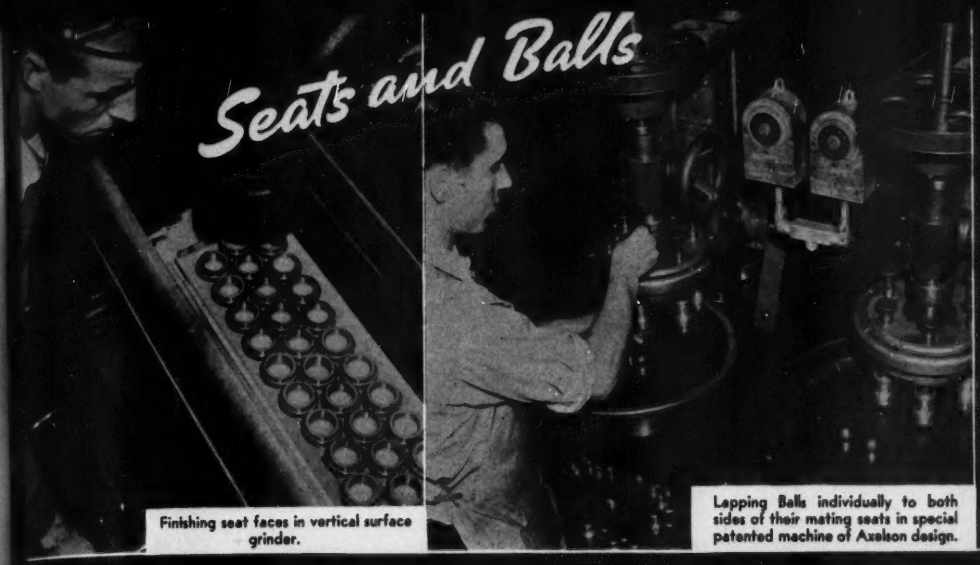
Finally, in the matter of hazard prevention, we must not overlook the in-

(Continued on Page 15)



Vertical 360 degree bend to compensate for movement due to earthquake shock or fire.

End view of flexible storage tank connections with frangible disc in foreground.



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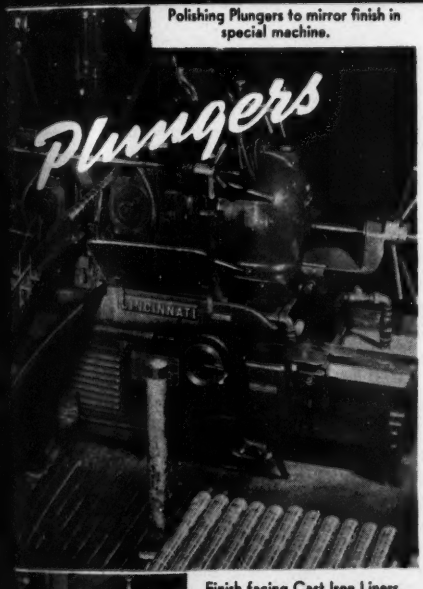
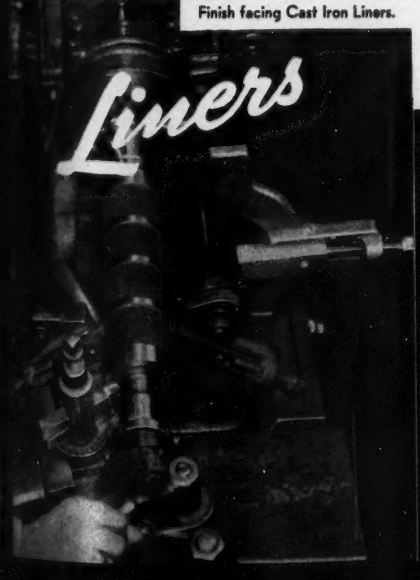


Polishing Plungers to mirror finish in special machine.



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Fact Finding Committee Curtailment Report

Outlines Constructive Program

Appointment of an election board of nine operators, by Chairman Lawrence Vander Leck at the Central Committee meeting on March 17 was the principal action taken when the Emergency Executive Committee, through its chairman, E. E. Pyles, presented the results of the ballot on the Fact Finding Committee's report on California curtailment.

The nine operators who will serve as the election board, and who are at present holding meetings to determine the best method of holding an election of field committees, are: Ross McCollum, W. H. Geis, H. S. Stark, Emil Kluth, William Keck, Jr., R. M. Sperry, W. C. Whaley, Joseph Jensen, and Warner Clark. These men have appointed a sub-committee of three, which will study the problem and report to the larger group.

Following presentation of the Fact Finding Committee report, J. U. Stair presented a motion calling for the election of new field committees, the chairmen of which will become members of the Central Committee. A recommendation that new field committees be elected was part of the Fact Finding Committee's report. Fields in the state have been grouped into 27 districts, some fields, like the old Montebello area and Montebello extension being grouped together for the sake of simplicity.

According to the letter read by Mr. Pyles to the Central Committee, the letter reporting the results of the ballot on the Fact Finding Committee recommendations, presented to the Central Committee on its March 17 meeting, said:

"The (emergency) committee has canvassed the ballots returned by operators voting on the report of the Fact Finding Committee, submitted to the industry. Ballots have been received from 163 operators, having a total allowable production of approximately 411,500 bbls. These ballots show that 126 operators having a total of 64,354 bbls. production approved the report in principle; 24 operators having a production of 222,642 barrels approved the report in principle but did not approve the formula; 13 operators with 124,548 bbls. production did not approve the report in principle.

"Considering results of the vote by operators and the allowable of oil they produce, the Emergency Executive Committee feels that it is its duty to recommend that the Petroleum Fact Finding Committee's report be accepted in principle, with the exception of said formula.

"We make the further recommendation that upon the election of the Central Committee, as prescribed in said report, said Central Committee then make such modification in the formula as will comply as far as possible with the suggestions made by those operators who approved in principle but suggested modification of the formula."

The formula recommended by the Fact Finding Committee is:

"That based upon potentials all wells in the state should be divided into three classes.

1. All wells with potentials below 25 b/d.
2. All wells with potentials above 1000 b/d.
3. All wells with potentials between 25 b/d and 1000 b/d.

"That all wells with potentials of 25 b/d or less, be permitted to produce at their maximum capacity. (If adopted, this will relieve 10,800 to 11,000 wells from curtailment; from the necessity of potential tests and will lessen the details of the proration procedure.)

"That any and all existing wells with potentials above 1000 b/d be given a maximum allotment suggested at 250 b/d to 300 b/d as may be determined by the Central Committee.

"That any and all existing intermediate wells with potentials between 25 b/d and 1000 b/d should be given allotments on a graduated percentage basis. No wells should receive an allotment of less than 26 b/d nor more than the maximum allotment.

"That a field allotment should not be more than the sum total of the individual well allotments in that field, but by action of the operators in that field it may be set at less.

"That the production of a property or lease should be the sum total of the individual well allotments. The amount thus determined should be produced from the lease or property and so far as possible or practical should be produced by the individual wells in accordance with their indivdual allotments. The strict adherence to such a principle might in some cases contribute to waste and to drainage and therefore, with the permission of the Umpire and Central Committee, operators should be permitted to enter into agreements with the offset operators or neighbors to perfect line and well agreements to prevent waste through the unnecessary producing of high gas-oil ratio wells or otherwise. The shutting in of interior wells and the producing their allotment from wells along property lines is viewed as undesirable practice and should not be recognized, except where offset operators are in agreement with the approval of the Umpire and Central Committee.

"That in the event our recommendations are adopted each well in the state should receive an allotment and any well, which is shut in and the allotment not permissibly produced, as provided for in VII from the property on which the well is situated should lose its allotment. When returned to production it should be given an allotment. Modification of this practice is permitted under certain transfer rules.

"When compressor wells other than offset wells cannot be produced below their potential, then other wells on the same property may be shut in without loss of allotment.

"In other justifiable cases where wells are shut in, and after the approval of the Umpire and the Central Committee, they may not lose their allotment.

"That aggressive transfers should not be permitted.

"That defensive transfers should only be permitted in exceptionally justifiable cases after notice to and approved by the Umpire and Central Committee.

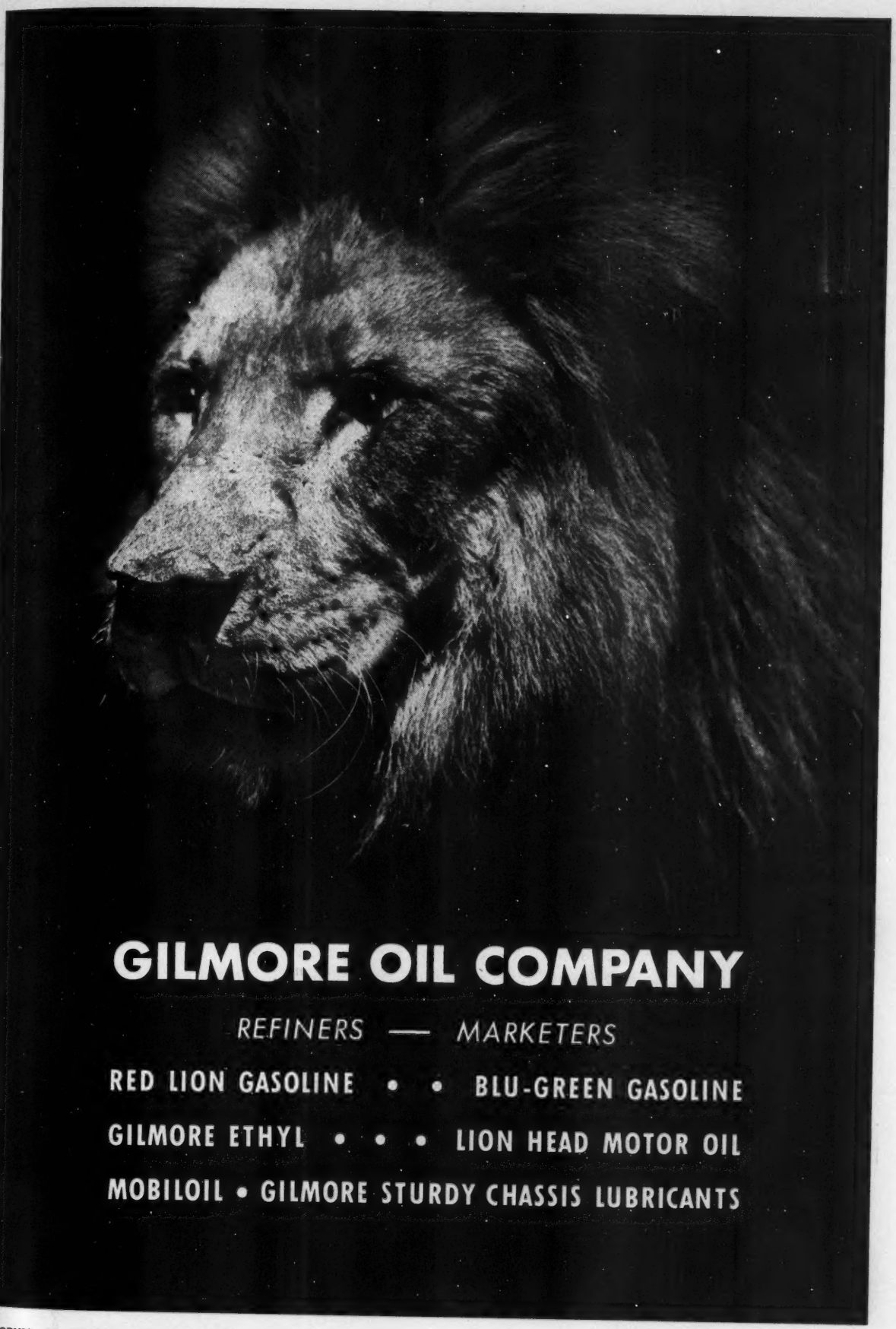
"The Umpire should keep a record of all approved transfers indicating the wells from which and to which the transfer is made.

"That no other type of transfer be permitted.

"That the new well and the new zone problem is one of the most important in the entire proration procedure as well as the most difficult to solve, is well recognized. The subject is now under investigation in every oil producing state and the answer has not been found. At present in California, and except by discouraging all unnecessary drilling and by the alleviation of lease obligations, no relief is in sight. Consequently, until additional study is completed by the Central Committee, the basis of allotments for new wells should be similar to that of other wells.

"A New Well Committee should be appointed within the Central Committee, charged with responsibility to determine the causes for any unnecessary or excessive drilling, and to suggest what in its judgment seems best to discourage such practices, such as encouraging operators to avail themselves of the longest permissible time between wells and modification of drilling obligations."

Objections to this formula were that, if it were rigidly followed, it would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throw approximately 25,000 barrels of heavy oil per day on the market, and that some of the lighter oil fields would be penalized. The heavy oil would, of course, present a grave problem, because it is just this type of oil that now constitutes the storage problem in the state.

During the Central Committee's discussion of the report of the Emergency Committee on the ballots, several suggestions were made as to how new Field Committees should be elected. Among the suggestions were that ballots should be sent to each operator in a field by registered mail, thus insuring his receipt of it; that the Field Committees should consist of not less than 5% or more than 10% of the operators in a field; that each operator be requested to nominate at least 10% and not more than 20% of the operators in a field for the committee. At Signal Hill, for example, where there are 180 operators, nominations for the Field Committee would total 36, out of which not more than 18 would be elected.

The Fact Finding Committee report was presented at a meeting of approximately 400 operators and other interested persons at the Biltmore Hotel, at which Mr. Pyles sketched the condition of the industry that led to the formation of the Emergency Executive Committee and the Fact Finding Committee, and told of the work that each committee had been doing since their joint formation last December.

He stressed the fact that the crisis that had led to the organization of the two committees was by no means past, saying that approximately 4,500,000 barrels of oil had gone into storage during January and February of this year. He then read the Fact Finding Committee report, which, in addition to the suggested formula for proration, made certain other recommendations as to the administration of curtailment of California production.

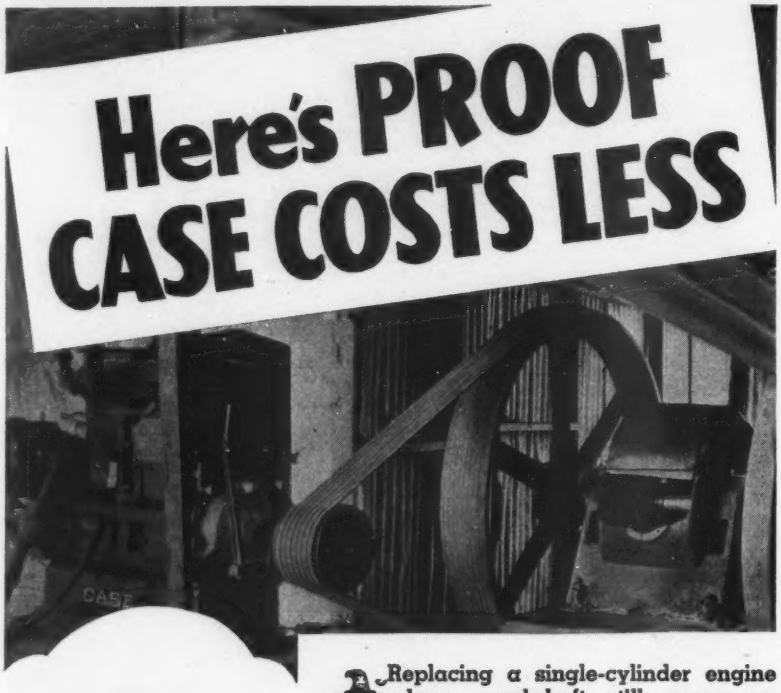
After sketching the industry's condition, the Fact Finding Committee report said:

"It is of importance after determining the present situation in the industry, to find out and to analyze the reasons why producers of oil in the face of these facts have not curtailed to a greater degree.

"Important is that the present procedure of curtailment is not well understood by the average operator. It is somewhat difficult for anyone except a trained mathematician to logically follow through the various steps by which the field and well allotments are derived. This is not to be taken as a criticism of the mathematics involved or that the resultant allocations are not fair or equitable.

"It is desirable to point out, however, that a procedure which is not readily understood is immediately subject to suspicion. The wide discretionary powers given to the various field committees in apportioning the fields' allotment have been the cause of confusion as between fields. This has been evidenced by wells of similar capacities receiving different allotments in different areas.

"The power factor has been questioned by many operators. This factor is, to those who understand it, a simple mathematical application of a graduated percentage scale, increasing the percentage of curtailment as the size of the well increases. It is beneficial to the small well operator; yet, due to misunderstanding, these operators as a group are the most opposed to the use of such a factor.



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CASE OIL FIELD ENGINES

"A very important factor which has contributed non-compliance is the question of base quotas. It will be recalled that the present base quotas were adopted in February, 1936, and took as their basis the production of December, 1935, which was considered to be uncurtailed. This assumption was apparently true in the case of certain fields and not true in the case of other fields.

"While during the past three years various adjustments have been made in the allotments to individual fields, there are still many operators who question the field allotments and who feel that new base quotas should be set.

"A question of major importance between operators and between fields relates to the relative correctness and fairness of the potentials of wells. Since potentials are the bases upon which the well allocations have been made operators have repeatedly questioned the potentials of other operators both within their fields and in other fields. The machinery has operated in the past so as to enable a person who thought his own potential was too low to appeal to have it raised. However, there does not seem to have been machinery available, nor the desire to lower potentials that were too high.

"This Committee has received innumerable complaints from the owners of stripper wells and of wet wells who have demanded that additional consideration be given to the large number of wells in this class.

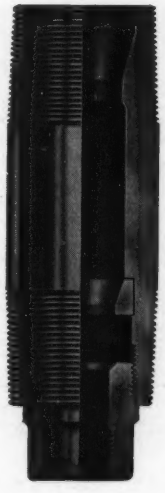
"It seems that considerable attention has been given by the present proration agencies to this problem. For the most part it may be noted that small wells are wet wells and therefore the problem of allowing more oil to small wells is, we believe, similar to the problem of allowing more oil to wet wells.

"Certain operators have contended very strenuously that allotments should not be based upon the individual well unless and at the same time factors of well spacing, density, gas-oil ratio and reserves are used, and that no schedule is equitable unless based on well density and then on wells. Very impressive arguments have been presented by this group of operators. However, irrespective of the apparent soundness of their position, it must be remembered that proration in California is still entirely voluntary and that the unit to be dealt with is the well and not the oil reserve beneath the well. The past procedure has been based upon the oil potential of the well without consideration to gas potentials and, in turn, without consideration to the monetary return to the respective owner.

"A matter of very serious consideration by many operators is the question of transfer. We find there are several distinct types of transfers. One relates to the transfer of allotment between fields and the other the transfer of allotments between wells in the same field. In some cases an operator has used a defensive transfer where there have been adjacent over-producing wells and the transferring operator can only protect himself by similarly over-producing. On the other hand, certain operators will shut in production in one field and transfer the allotment to another field and, by over producing in that field, force other operators in the same field to over-produce. This is known as an aggressive transfer and has been condemned by most operators.

"In the same manner, there exists aggressive and defensive transfers between properties and between wells. Another form is the transfer of allotments of low gravity oil to high gravity oil.

"Brought to the attention of this Committee by many operators and particularly emphasized by the Oil Umpire is the problem of the new well. Just how important the problem of the new well is may be evidenced from the fact that



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in the years 1936, 1937 and 1938 there were 2,960 new wells completed in the state. The initial potential of these wells amounted to 2,256,505 barrels per day, and the initial allotment which these wells obtained, while they were flush wells, amounted to 351,975 barrels per day.

"It should probably be noted that the success of wildcat drilling is not quite the same as the new well problem. New fields in themselves are not a menace to the stability of the oil industry. They only become a menace when they are drilled at too rapid a rate. New reserves in themselves are a benefit to the industry and a guarantee of its future stability.

"The new well problem is somewhat tied to excessive lease requirements. These lease requirements are partly occasioned by the conditions in leases caused by the competitive desire of operators to obtain leases, and partly because present operating efficiency makes it possible to complete wells at a more rapid rate than heretofore. Likewise, the demands of land owners have entered into the question of rapid drilling and have further complicated the situation."

After briefly reviewing and commending the present curtailment structure, the Fact-Finding Committee recommended:

"That the present organization for proration be continued.

"(a) That in the interest of extending representation to those not now actively participating, an early election be held to select Field Committees and the Chairmen thereof. The method to be used in conducting such election shall in general accord with past procedure.

"(b) At the same time and by means of the same ballot on which the operators vote for the Field Committeemen, they shall also vote directly for the Field Chairman, who, upon election, shall become a member of the Central Committee.

"(c) No producer shall have more than one member on the Central Committee.

"(d) The authority of the Umpire should be expanded to include not only his present duties but the following:

"1. To determine potentials.

"2. To classify all wells into the proper groups.

"3. To prepare the allocation schedules by wells.

"4. To settle disputes, subject at all times, to the right of appeal by the producers to the Central Committee.

"5. To perform such other duties as the Central Committee may impose.

"(e) That the operators contribute their proportionate share to the cost of maintaining the Umpire's office.

"(f) That the practice of Field Committees setting maximum allotments in their respective fields is believed to be undesirable and should not be continued. Upon the recommendation of the Field Committee and approval by the Central Committee, after a field quota has been determined in accordance with the rules, the intra field method of allocation could be modified to fit the justifiable exception in a particular field, such as water allotments, minimum allotments to the intermediate class of wells; graduated percentage to straight percentage, excessive gas-oil ratio wells, etc.

"That the Oil Umpire should forthwith order and supervise potential tests on all wells in order to place them in their proper classification. It follows that the potentials of wells in the maximum and minimum class are readily determinable for allocation purposes. The bulk of the state's allotment is given to wells in the intermediate class and no schedule can be equitable unless the potentials of this class are relatively accurate. In certain of the older fields the present potentials are well known from the admitted unrestricted recent past production.

"Where possible the potential tests should be simultaneously conducted in a field.

"Any operator caring to observe a potential test shall be permitted to do so and it may be desirable for the Umpire to appoint representatives from fields other than the one being tested to observe and to witness the test.

"That the Central Committee give consideration to the advantage of setting the state's quota as an average monthly quota for a quarterly or semi-annual period.

"That the Central Committee review the possibilities of including gas production as a factor in curtailment procedure. We have been advised that in part the present storage situation is attributable to the displacement of fuel oil through the introduction of natural gas as fuel, mainly to industries. We view it as a wasteful practice to blow gas to the air in some fields while at the same time a more fortunate field absorbs the gas market. The proration or ratable taking of gas as a conservation measure should be studied."

The report was signed by W. S. Rosecrans, chairman; W. H. Geis, Dana Hogan, Victor H. Rossetti, and E. G. Starr. Members of the Emergency Committee are: E. E. Pyles, Chairman, Ross McCollum, C. C. Spicer, H. P. Grimm, and J. B. Wells.

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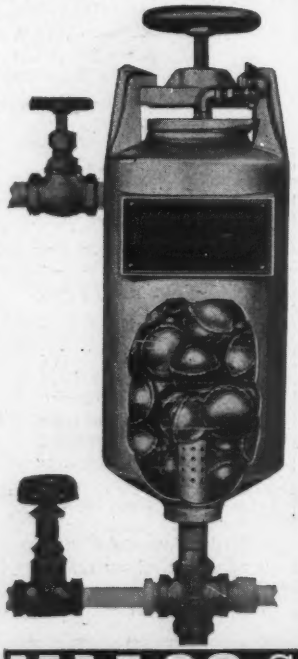

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Trial and Error Factors in Absorption

Reduced by Research and Cooperation

By Keller Grigsby, The Norwalk Co.*

The advancement of the understanding and application of the principles of absorbing hydrocarbon fractions has been rapid during the last few years. From the time when the extraction of gasoline was a mass of conflicting opinion to the present reasonably well-ordered theory, the number of trial and error factors have been reduced.

The progress of the art has been due to a great deal of research by the operating companies and the equipment manufacturers and by the co-ordination and exchange of information made possible by the C.N.G.A. and other splendid organizations of the same nature. The best evidence of the success of the theory is apparent in that the whole industry is based on the same process.

An understanding of absorption by every one engaged in the business is of tremendous importance from a standpoint of efficiency and profit. It has a very definite value in safety work. The purpose of this paper is only to summarize some of the most important facts.

Importance of Vapor Pressure

An absorption plant is entirely a vapor pressure trick. Excepting for the power and heat exchange necessary and some pipe and tanks to keep the material with which we are dealing where we want it, the whole process is a function of vapor pressure.

The vapor pressure of a fluid for a given temperature is that pressure which the fluid will exert under equilibrium conditions. Equilibrium simply means that the liquid has a certain tendency to vaporize and the vapor has an equal tendency to become a liquid. If the pressure and temperature remain the same, the volume of liquid and the volume of vapor will not change.

An increase in pressure or a decrease in temperature will disturb the equilibrium and some of the vapor will condense until the vapor/liquid ratio has readjusted itself for the new condition. This tendency quite naturally works in both directions and we take advantage of one effect in absorption and the other in stripping.

The first step in understanding natural gasoline work is to have a good knowledge of the gas laws of Dalton, Raoult and Henry, which as Dr. Lacey said: "We cherish, although we know they are not entirely true."

Keller Grigsby

Vapor Pressure of Lean Oil

The function of oil in an absorber is to provide a low vapor-pressure material to overcome the volatile tendency of the fractions which we wish to retain. So it follows that the lower the vapor pressure of the lean oil, the more effective it will be at the top of the absorber.

It can be mathematically shown that the vapor pressure of the lean oil has a definite proportional relation to the gasoline fractions left in the dry gas. Actual experience checks these predicted values with very satisfactory accuracy and the stripper becomes a very important part of the cycle. It is necessary that the stripper deliver an oil with a vapor pressure of not much more than 2 mm. of mercury for good results.

Importance of Low Temperature

The temperature in an absorber should be kept as low as possible. The oil rate will have to be increased as the temperature rises in order to maintain the same degree of extraction. In high pressure absorbers where the oil is highly saturated, the oil is some times re-cooled at some point in the absorber to take out heat generated due to condensation of gasoline fractions. A temperature of from 2 to 5 degrees above wet bulb is generally considered the lowest practical, although there are plants in the Mid-Continent where the oil is actually refrigerated to lower temperatures.

Importance of Pressure

The work of absorption is somewhere nearly inversely proportional to the absolute pressure on the absorber. Where high pressure gas is available from traps, it is a definite advantage to operate a high pressure plant. Where the wet gas is gathered at or near atmospheric pressures and there is any considerable volume of dry gas to be sold at a second or third stage of compression, it is probably advisable to design the plant to absorb at the higher compression. The advantage of pressure on absorption begins to fall away from the theoretical at about 350 to 400 pounds and the effective vapor pressure should be carefully considered, as was shown by Bowman before CNGA in May, 1938.

Importance of Oil Quality

It is essential to keep the oil in the absorption system clean. As the oil is used over and over, it becomes emulsified, forms gums and is sometimes contaminated by the steam cylinder oil in the exhaust steam used for stripping. Equipment may be fouled in a very short time, causing a sharp reduction in the efficiency of absorption, stripping and heat exchange. The older method of combating this fouling was to change the entire amount of oil in the system at periodic intervals. Most operators have found it advisable to install continuous cleaners which may process 10 to 50 per cent of the oil in the system daily. This method is far more satisfactory from an operating standpoint than any other yet suggested.

The quality of an absorption oil, assuming it to be clean and stripped, is generally defined as its ratio of specific gravity to molecular weight, or the mols of oil per gallon of oil. If the molecular weight is low, it takes less oil to supply the unit of effective volume. This theoretical conception has been found by D. B. Johns to deviate as much as ten percent from the actual value.

In a paper presented at the November 1938 Fall Meeting of the association, Mr. Johns explained how an actual value could be determined.[1]

Importance of Absorber Design

Assuming a completely stripped oil, we can think of absorption-factor unity as equal mol-volumes of oil and gas adjusted for equilibrium conditions of pressure and temperature. This beautiful thought would represent the oil/gas ratio for total extraction of a fraction in a perfect absorber with an infinite number of plates; or about 2 and 2/3 mols of oil for each M.C.F. of gas treated (assuming

*Presented at the March regular monthly meeting of the California Natural Gasoline Association. The California Oil World is the association's official publication.

[1]California Oil World, Second Issue, November, 1938, page 26.

[2]California Oil World, Second Issue, January, 1938, page 20.

the vapor pressure of the fraction considered and the absolute pressure on the absorber to be equal).

It is now possible to purchase absorbers from reliable manufacturers with reasonably well-predicted efficiencies. Absorbers will contain from 16 to 24 plates and will usually have from 4 to 12 effective perfect plates. Most plates in use are of one of two types; either bubble cap or perforated. The present trend seems to favor the bubble-cap type, although some still favor perforated plates. This is probably due to the fact that perforated plates offer a lesser tendency to become fouled.

In the use of any absorber, the efficiency may be determined by fundamental analysis and oil rates predicted for given conditions. The setting of an absorption-factor for an absorber was well covered by Liljenstein at a C.N.G.A. meeting in January, 1938.[2]

Importance of Personnel

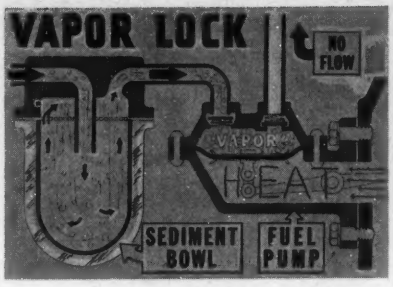
After a plant is designed and built, the most important factor in operation is a well-trained and wide-awake personnel. There is nothing very difficult about operating a plant where everything is running along smoothly. A really good operator is a man who knows what to do in an emergency. Very often a plant will run along with few changes for a number of years until it is forgotten how complicated things may be in a quick shutdown. Mechanical safeguards are still only as good as the men who maintain and use them. Give a man two buttons and he can still push the wrong button. The best safety precautions will include essential well-cared-for safety relief valves which can be tested and repaired with the plant in operation. Dump valves should be provided at key points with lines conducting the volatile materials away from the plant to a point where they may be definitely ignited. It is essential that men must know how to use the equipment and at all times be capable of clear, deliberate reasoning.

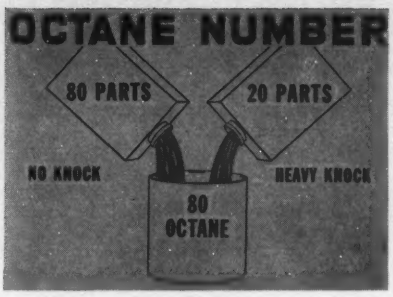
Safety Advanced In Natural Gasoline

(Continued from Page 6)

fluence of the well trained and intelligent operator. It is here again that education comes in, because, after all, practically everything in the plant depends more or less on the human element, and the more efficient this element becomes, the nearer will we approach to ideal safety conditions.

New anti-rust preparation for machinery or tools forms a tough, elastic nonporous film which can be removed with gasoline or kerosene when the article is ready for use.





"Casinghead" gasoline now supplies a high octane, non-vapor locking part of superior motor fuels.

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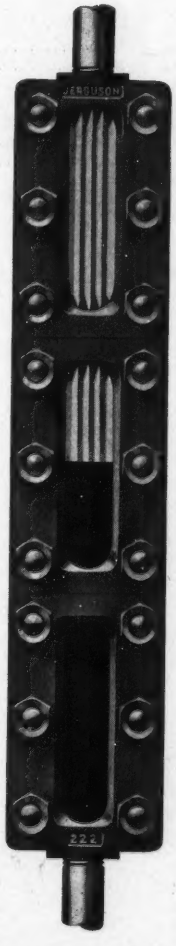

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PRODUCTION :-: DEVELOPMENT

(Figures of Production and Stocks are in barrels of 42 Gals.)

	Total Production January	—DAILY AVERAGE— Jan., 1939	Dec., 1938	Jan., 1938
Group No. 1				
Belridge—North	388,929	12,546	12,968	15,581
Belridge—South	34,542	1,114	1,185	1,552
Canal	121,873	3,931	3,893	465
Canfield Ranch	976	32	41	20
Coalinga	299,322	9,656	9,558	14,891
Cole's Levee	5,307	171	179	.....
Edison	77[illegible],761	2,509	2,521	3,659
Elk Hills	312,707	10,087	10,143	10,936
Fruitvale	219,706	7,087	7,376	9,639
Greeley	64,474	2,080	2,208	3,680
Kern River	348,615	11,246	11,319	14,772
Kettleman Middle Dome	1,157	37	39	83
Kettleman North Dome	1,809,875	58,383	59,867	81,352
Lost Hills	100,361	3,238	3,207	3,638
McKittrick	114,758	3,702	3,479	4,252
Midway-Sunset	1,725,620	55,665	56,769	75,492
Mountain View	272,635	8,795	9,238	13,968
Mount Poso	419,256	13,524	13,808	20,384
Rio Bravo	244,462	7,886	8,605	2,582
Round Mountain	375,374	12,109	12,795	18,201
Ten Section	271,046	8,743	8,719	3,887
Tupman	9,419	304	.....	.....
Wasco	21,766	702	633	.....
Wheeler Ridge	11,825	381	307	313
Group No. 2				
Capitan	84,947	2,740	2,812	3,095
Elwood	143,907	4,642	4,810	7,664
Rincon	119,241	3,846	3,835	3,189
San Miguelito	76,931	2,482	2,489	4,065
Santa Barbara	10,601	342	420	523
Santa Maria	515,026	16,613	15,615	15,850
Summerland	604	20	24	32
Ventura Avenue	1,044,011	33,678	33,908	36,337
Ventura-Newhall	170,985	5,516	5,237	5,277
Watsonville	930	30	30	60
Group No. 3				
Brea-Olinda	173,586	5,600	5,626	6,151
Coyote—East	80,109	2,584	2,758	4,053
Coyote—West	245,377	7,915	8,151	9,465
Domingues	673,179	21,715	24,421	30,192
El Segundo	124,081	4,003	5,009	19,450
Huntington Beach	851,735	27,475	30,659	34,511
Inglewood	400,947	12,933	12,916	16,046
Lawndale	1,945	62	73	97
Long Beach	1,525,810	49,220	51,948	57,040
Los Angeles-Salt Lake	15,406	497	482	575
Montebello	451,473	14,564	16,370	8,225
Playa Del Rey	165,756	5,347	5,538	7,311
Potrero	28,760	928	1,012	381
Richfield	252,057	8,131	8,208	9,771
Rosecrans	464,685	14,990	14,847	5,558
Santa Fe Springs	922,327	29,752	30,141	40,666
Seal Beach	236,612	7,633	7,822	9,542
Torrance	610,531	19,695	19,221	7,704
Whittier	30,618	988	900	896
Wilmington	2,600,136	83,875	92,144	66,870
Total	19,274,079	621,744	646,283	709,943
December	20,034,759	646,283		
Decrease	760,680	24,539		

SUMMARY OF CALIFORNIA OILFIELD OPERATIONS FOR JANUARY, 1939—STOCKS HELD IN PACIFIC COAST TERRITORY BY CALIFORNIA OIL COMPANIES

	January 31, 1939	Dec. 31, 1938 (Reclassified)	January Changes
1. Gasoline-Bearing Crude	36,831,079	36,225,312*	+ 605,767
2. Non-Gasoline-Bearing Crude	16,355,501	16,282,177	+ 73,324
3. Unblended Natural Gasoline	2,536,877	2,699,455	− 162,578
4. Gasoline (not including distributing and service stations)	14,265,941	13,259,369	+1,006,572
5. Naphtha Distillates	1,669,331[1]	1,566,349[1]	+ 102,982
6. Gas Oil and Diesel Oil	10,689,438	10,539,937	+ 149,501
7. Fuel Oil Residuum	71,245,092	70,957,881	+ 287,211
8. All Other Stocks	6,338,218	6,153,809	+ 184,409
TOTAL	159,931,477	157,684,280*	+2,247,188
[1]Estimated amount of unfinished gasoline contained in item 5	1,408,777	1,350,379	

*Revised.

	New Rigs Up	Active Drilling	Producers Completed	Daily Initial Output	Active Producing	Abandoned Wells Drillers	Abandoned Wells Producers
Group No. 1							
Belridge—North	1	6	1	175	60	....	....
Belridge—South	..	....	....	....	87	....	....
Canal	..	2	2	3,833	17	....	....
Canfield Ranch	..	....	....	....	1	....	....
Coalinga	11	13	6	12,022	705	....	....
Cole's Levee	1	2	....	....	1	....	....
Edison	1	3	....	....	88	1	1
Elk Hills	..	....	....	....	169	....	....
Fruitvale	..	1	1	320	174	1	3
Greeley	..	5	....	....	14	....	....
Kern River	2	5	1	15	1,364	....	....
Kettleman Middle Dome	..	....	....	....	3	....	....
Kettleman North Dome	5	5	3	5,688	215	....	....
Lost Hills	..	2	1	69	245	....	....
McKittrick	..	3	1	Gas	190	....	....
Midway-Sunset	2	5	2	53	2,495	1	....
Mountain View	..	....	....	....	189	....	2
Mount Poso	1	2	....	....	269	1	....
Rio Bravo	..	2	2	4,246	26	....	....
Round Mountain	1	....	1	107	194	1	....
Ten Section	..	1	1	2,512	28	....	....
Tupman	1	....	....	....	1	....	....
Wasco	..	3	....	....	3	....	....
Wheeler Ridge	..	....	1	104	30	....	....
Group No. 2							
Capitan	1	1	....	....	48	....	....
Elwood	..	....	....	....	80	1	....
Rincon	..	1	....	....	50	....	1
San Miguelito	1	1	....	....	19	1	....
Santa Barbara	..	....	1	100	34	....	....
Santa Maria	..	2	....	....	301	1	....
Summerland	..	1	....	....	18	....	....
Ventura Avenue	1	9	3	5,605	262	....	....
Ventura-Newhall	5	9	2	293	547	1	1
Watsonville	..	....	....	....	7	....	....
Group No. 3							
Brea-Olinda	..	1	1	170	348	....	....
Coyote—East	..	....	....	....	85	....	....
Coyote—West	1	....	....	....	51	....	....
Domingues	1	2	1	704	196	....	....
El Segundo	..	....	....	....	52	....	....
Huntington Beach	4	5	2	651	549	....	2
Inglewood	..	....	....	....	208	....	....
Lawndale	..	....	....	....	6	....	....
Long Beach	..	....	1	179	1,260	....	2
Los Angeles-Salt Lake	..	....	....	....	112	....	....
Montebello	3	15	2	1,306	222	....	3
Playa Del Rey	..	....	....	....	184	....	1
Potrero	1	1	1	295	14	....	....
Richfield	..	....	....	....	293	1	....
Rosecrans	5	7	9	3,902	118	1	1
Santa Fe Springs	..	....	1	394	589	....	5
Seal Beach	1	1	....	....	112	....	....
Torrance	15	17	10	4,531	679	....	1
Whittier	..	....	....	....	151	....	....
Wilmington	18	13	9	3,523	597	....	1
Miscellaneous Drilling	10	39	....	....	....	11	....
Group No. 4—Gas Fields							
Buena Vista Lake	..	....	....	....	4	1	....
Buttonwillow	..	....	....	....	29	....	....
Chowchilla	..	....	....	....	....	....	....
Delano	..	....	....	....	....	....	....
Dudley Ridge	..	....	....	....	....	....	....
Goleta	..	....	....	....	....	....	....
McDonald Island	..	....	....	....	6	....	....
Rio Vista	..	....	....	....	22	....	....
Semi-Tropic	..	....	....	....	13	....	....
Tracy	..	....	....	....	5	....	....
January	93	185	66	50,797	13,839	23	24
December	75	155	51	33,164	13,930	39	36
Increase (*Decrease)	18	30	15	17,633	91*	16*	12*

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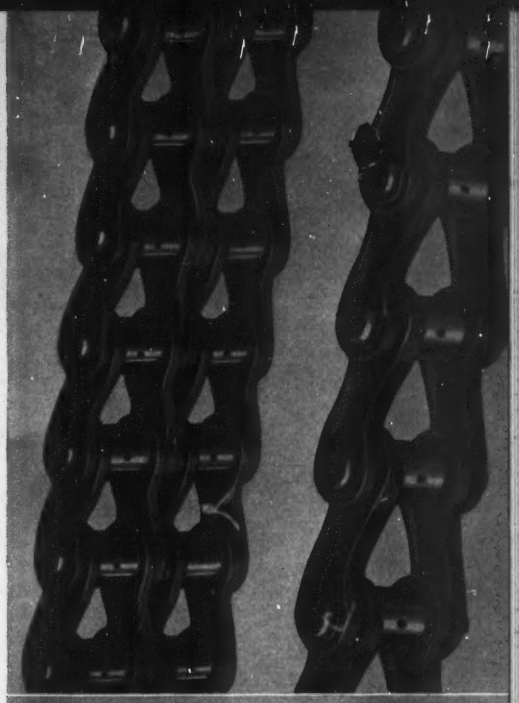

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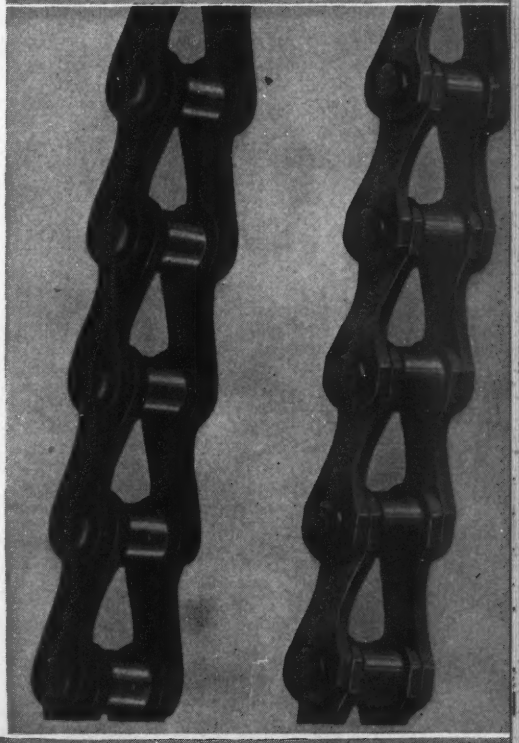

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LAUGH THIS OFF

We have just learned the sad story of a local oil worker who lost a mighty good job through a misunderstanding. He understood the boss was up north, and went out playing golf.

And when **Frick Gibbs** caught up with **Leon Barrett** at the fourteenth hole, he enquired kindly, "Can't you find your ball?" "Yeah," says Leon, "I've found the ball all right, I'm looking for my club."

Wherewith we pause to recount **Joe Scanlon's** yarn about the Fillmore rousty who was awakened in the middle of the night and informed that his mother-in-law had just been injured in an auto accident. "Thasso?" he yawned, "Better come around and tell me in the morning. I'll sure be sorry to hear it."

Joe will be remembered as the propounder of that nationally famous conundrum, "Why does a pipeline cross the road?" Answer (at no extra charge). "To get the oil to the other side."

And a youthful correspondent writes to ask if gasoline that doesn't knock is a product of contented crude.

Which recalls another bright boy who described a conchologist as "a guy who works with the Shell."

Then there was the chap **John Sweet** tells about who would have made a fortune if he had only had the heart. He drew a spade, however, and had to go back to work.

In this same connection, we understand that a group of oil men out Richfield way have formed a little organization known as the Manicure Club, so called because the members are always trying to improve their hands.

And a petroleum engineer who shall be nameless had a little poker party at his home a few nights ago, and doesn't know which was the most upset—the ash tray or his wife.

By the way, did we ever tell you about **Ike Burroughs'** friend out at Santa Fe Springs, who always smoked Mae West cigars, because "they was nicely shaped and drawed well."

It is reported that **Swede Larsen** has started bowling up at Bakersfield, and when he starts one up the alley, the pin boys leave. They are still looking for some of the pins he scattered on the night of his first appearance.

This bowling pastime has become very popular with oil men, and it's remarkable that the busiest chaps in the industry can always find time to spare.

An interesting development, incidentally, in the sports line, according to **Ray Pierson,** is a new type of checkers in which Mexican beans are used instead of the usual pieces. They do their own jumping.

Jim Roggie next takes the rostrum to relate the story of an old timer in the business who was recently retired. He had never had much of a job, and his company had no pension plan, so he wasn't very well prepared for a life of ease and indolence. When the last day of his employment arrived, someone asked him how he felt now that he didn't have to work any more. "Well," he said, "I just feel as if there had been two elephants sittin' on me for the past 40 years, and now one of them has got off."

And every time we hear of any body going into retirement, we always think of the old parable about the guy who loafs and fishes.

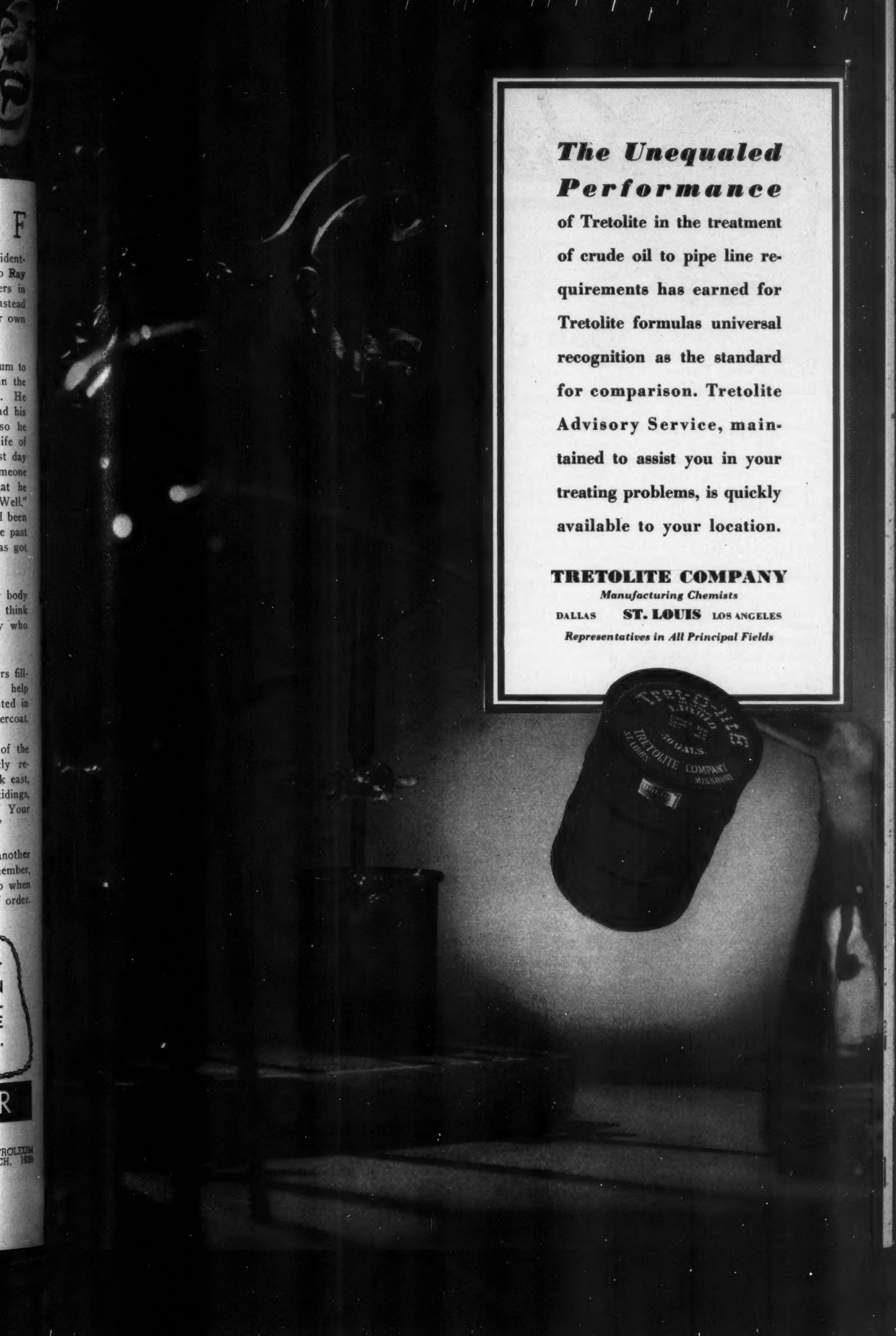
Now with wars and talk of wars filling the news sheets, we can't help thinking of the rousty who enlisted in the last one just to get a new overcoat.

Which, of course, reminds us of the Signal Hill pumper who recently received a wire from the folks back east, bearing the following glad tidings, "You can come home now. Your tailor passed away this morning."

That brings us to the end of another futile effort to be facetious. Remember, work is merely something you do when your car and the radio are out of order.

Use me to—BRING IN WELLS EASILY—GET GOOD CEMENT JOB — SET LARGER CASING OR LINER — STRAIGHTEN CROOKED HOLE—GET BOTTOM WATER SHUT-OFF—ENLARGE HOLE FOR GRAVEL PACKING—DETAILS ARE IN THE BAKER SECTION OF YOUR COMPOSITE CATALOG.

BAKER ROTARY WALL SCRAPER



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Field Development

San Joaquin Valley

Wasco Well Flows 9200 Bbl. Potential

The latest Wasco production was obtained in Continental Oil Co.'s KCL No. A-4-8, completed with an estimated potential of 9200 bbls. per day from 13,153 ft. Located a thousand ft. south of the company's A-2, the deepest drilled hole in the world, in sec. 8,27-24, the well is the third deep producer of the field. Present production is given as 537 bbls. of 38 gravity oil which is very clean. Gas flow was better than 2,000,000 feet per day. Off-setting the new producer are two Standard Oil Co. drillers. Eight hundred feet northwest, Standard is below 13,000 ft. with Mushrush No. 2, while 1000 ft. south of the well lies Standard's KCL 8B-2, drilling below 11,500 ft. In the extreme southeast corner of the township Union Oil Co. is below 9100 ft. in Kernco No. 1-36.

Standard, Union Extend Cole's Levee Oil Field

Extending the newly found Cole's Levee field over half a mile to the east, Union Oil Co. made an extremely favorable formation test in Kernco No. 1-11, sec. 11,31-25, while Standard Oil Co. cored top stringers of Stevens sand at 8460 ft. in KCL No. 20-1, sec. 9. The latter well, apparently over 700 ft. higher than the discovery well, seems destined to push productive limits nearly a mile to the west. Union Oil Co., after coring Stevens oil sand from 9645 ft. to bottom at 9685 ft., ran a tool test on the lower 55 ft. of hole which resulted in a strong flow of nearly clean 33.5 gravity oil together with a strong head of gas. Recovered in the drill pipe was 800 ft. of free oil and a small quantity of mud and fresh water. Firm in the conviction that it has a real oil well, the company will set casing, open more formation and complete in the conventional manner.

Second well to go on production will be Ohio Oil Co.'s KCL No. F-2, one location north of the discovery well. Seven inch casing has been set at 9328 ft. over the top of the second zone and the project will be finished with 325 ft. of the black oil horizon open to bottom at 9653 ft. Following the practice common at Ten Section and Canal, the upper gas and light oil sands have been blanked off and a more favorable gas-oil ratio is expected than in No. F-1, which, with a 4/64-in. bean, flowed 280 bbls. of 45 gravity oil and 975,000 cu. ft. of gas.

In an attempt to extend the field to the north, Richfield Oil Corp. is rigging up Western 2nd B No. 14-3 near the west quarter corner of section 3. Half a mile south of Union's well, Tide Water Associated Oil Co. is preparing to spud its KCL No. 61 in the northeast quarter of section 14.

Lytle Completes In Eocene Pool

Latest completion in the Coalinga Eocene Pool is the Robert S. Lytle No. 35-7F, in the very active sec. 7,20-16. Flowing 1068 bbls. in the first nine hours of production, the well is one of four Lytle projects in this section. The oil is clean and of better than 31 gravity. Yielding good oil from the Gatchell sands based at 7325 ft., the completion frees another string of tools for immediate operation. Mr. Lytle, operator of the Petroleum Securities interests, has well No. 31-7F drilling at 5528 ft., while well No.'s 51-7F and 62-7F are rigging up. Other Lytle operations in the pool are 86-12C in sec. 12,20-15 and 3-18F in sec. 18,20-16 neither of which is yet rigged up. In sec. 18, No. 22-18F is drilling below 6925 ft. after finding the grit zone at 6883 ft.

Standard Oil Co. continues to drill on sec. 13,20-15 with two strings. Well No. 71-13C is at 6750 ft. in sandy shale while 73-13C drills in hard shale below 5500 ft. Superior Oil Co. Coalinga Fee Nos. 3 and 4 are each drilling ahead below 7500 ft. The Texas Co. Exeter No. 1 is in hard gray shale at 6000 ft.

Adding a project to the busy area, Holly Development Co. announces location to be known as Well No. 1 on sec. 12,20-15.

Union Ave. Abandonment Keenly Disappointing

Keenly disappointing to south Bakersfield property owners and many others who have held high hopes for the area since Pacific Eastern's blow out eleven years ago was the recent abandonment of Richfield Oil Corp.'s Union Avenue No. 1. Located near the center of sec. 6,30-28 where properties are relatively small, the well had a larger popular following than any Valley wildcat drilled in late years.

With only 842 ft. of surface casing in the hole, the well attained a total depth of 10,427 ft. Originally scheduled as a test of Etchegoin and Chanac showings found above 5000 ft. in the many other prospect wells drilled in the vicinity, Union Avenue No. 1 was equipped with a wood rig and old, comparatively light engines, draw works, pumps, etc.

A formation test of the upper interval 4410-4440 ft. resulted only in the recovery of gassy mud so the hole was carried down for further exploration. At the top of the Santa Margarita, 5200 ft., another formation test was made, this time the recovery being water with a slight trace of oil. A third test at 5700 ft. recovered only mud with no showings of oil or gas. Continued drilling revealed the top of the Wicker sand at 6725 ft. and the Vedder at 9665 ft.; both zones being entirely devoid of either oil or gas. Formation at the bottom was reported to be of Lower Miocene age. Due principally to the lightness of the equipment employed, over seven months were required to drill the well.

Calif. Exploration Co. Cores Stevens Oil Zone

California Exploration Co.'s important deep test, located south of the Buttonwillow gas field in sec. 7,29-24, is yet the hottest wildcat in the San Joaquin Valley. Cores from 11,535 ft. to last reported bottom at 11,819 ft. have recovered shale streaked with fine, hard, tight oil sand of low porosity which has been definitely identified as Stevens zone. Hoping to encounter a better reservoir rock, the well is still drilling.

Superior Tests McClung Wildcat

Finding all formations barren below the Vedder zone, Superior Oil Co. is testing that horizon in its super deep wildcat, KCL No. 12, in the McClung area. Located in sec. 3,30-26, the hole was carried to 13,131 ft. before plugging to 11,280 ft. where a string of 6⅝-in. casing has been cemented. A production test is now being made after perforating a short interval below 11,140 ft. in the Vedder zone.

SAN JOAQUIN VALLEY WILDCATS

Fresno County

Area	Well	No.	Section	Depth	Status
Coalinga	Amerada Pet. Corp., SPL	7–17	17, 19-16	7407	Drilling
	American Oil Fields, Inc.	1	16, 19-15	250	Idle
	Foreign Oil Co.	6	6, 21-15	2485	Idle
	Jarvis, Leo P.	2	14, 20-14	805	Idle
	Progressive	3	20, 19-15	852	Idle
	Roco Oil Co.	1	3, 20-14		Rig
	Stuart Oil Co., Stuart	1	12, 21-14	1315	Drilling
	Fresno Area, Seth Turner	1	4, 14-19		Rig
Jacalitos Hills	Dauphin Dev., Ragan	1	30, 21-14	4587	Idle

Kern County

Arvin	Superior-Standard-Texas, Jewett	1	16, 31-29	6270	Producing—Shut-in
	Superior Oil Co., P.D. Jewett	1	16, 31-29	4459	Drilling
Buttonwillow	Calif. Explor. Co., Salisbury	1	7, 29-24	11721	Drilling
Canal	Shell Oil Co., KCL	B-87	4, 30-25	12652	Drilling
Coles Levee	Ohio Oil Co.	KCL-F2	10, 31-25	9653	Drilling
	Richfield Oil Corp.	2nd B-14-3	3, 31-25		Rig
	Standard Oil Co.	KCL 20-1	9, 31-25	8375	Drilling
	Tide Water Associated	KCL-61	14, 31-25		Rig
	Union Oil Co., Kernco	1–11	11, 31-25	9685	Drilling
Devil's Den	Amerada Pet. Co., Beer	6	21, 26-19	4591	Testing
	Herzog, Raymond D.	1	27, 25-18	612	Idle
Edison	Hillview Oil Co., El Tejon	1-A	11, 30-30	2661	Fishing
	Renner & R.H.L. Oil Co.	1	27, 30-30	2600	Idle
Elk Hills	Richfield Oil Corp.	A-52-32	32, 30-25	8454	Drilling
	Standard Oil Co.	KCL 21-1	19, 30-25		Rig
Grapevine	Petrol Corp., Reserve	33–5	33, 11-19	8956	Drilling
	Tide Water Assoc. O. Co., S.P.	2	15, 11-19	7326	Abandoned
	J. L. Milburn	1	13, 29-28		Location
	Shell Oil Co.	KCL A-23	2, 29-26	9207	Drilling
	The Texas Co.	KCL 35-1	35, 28-26	8642	Drilling
Lost Hills	California Lands, Occidental	2	24, 26-20	5623	Idle
McClung	Superior Oil Co.	KCL-12	3, 30-26	13131	Drilling
Mt. Poso	Shell Oil Co., Glide	48–29	29, 27-28	2508	Idle
	Vendome Oil Co.	1	28, 26-28		Rig
Midway	Fried, Julius	1	34, 32-24	5035	Idle
Richgrove	Dilamar Oil Corp., Quinn	3	15, 25-27	2200	Drilling
Round Mountain	Spartan Oil Co.	1	32, 28-29		Grade
San Emigdio Area	Shell Oil Co.	KCL 1A-8-32	32, 11-22		Rig
Strand Area	Tide Water Associated Cont.	KCL-E-35-7	7, 30-26		Rig
Trico	Standard Oil Co., M.&L.	8–1	3, 25-23	2463	Shut in
Union Ave.	Richfield Oil Corp., Union Ave.	1	6, 30-28	10427	Abandoned
Upper Kern River	Kern Valley Drlg. Co.	1	4, 29-29		Rig
Wasco	Union Kernco	1–36	36, 27-24	9165	Drilling

Kings County

Strattford	P. W. Burnham & Assoc. Bartells	1	23, 20-20		Rig

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BAKERSFIELD - LONG BEACH - TORRANCE
HUNTINGTON BEACH - WILMINGTON

T.W.A.-Continental To Drill In Strand Area

With lease concession from the Continental Oil Co., Tide Water Associated Oil Co. is rigging up for a test of the area lying between Canal and Greeley Fields. Located in sec. 7,30-26 and known as Cont. K.C.L. No. E-35-7, the project is 1¼ miles northeast of Canal and 3¼ miles southwest of the nearest Greeley production. Lying closely between good oil producing areas, the project will unquestionably be watched with great interest. A bit short of a mile to the north of the present try, Ohio Oil Co. drilled KCL No. E-2 to a depth of 8790 ft., while a little short of 2 miles northwest, the same company drilled KCL No. D-1 to a bottom of 9000 ft. Approximately 1¼ miles to the southeast Continental drilled KCL No. E-1 to 8574 ft. before abandoning. With the surrounding acreage committed to operators in large blocks, discovery of oil would be unlikely to lead to intensive and competitive drilling.

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Coffeyville, Kansas, U. S. A.

Tide Water Abandons Grapevine Wildcat

After testing all possibly productive zones, Tide Water Associated Oil Co. abandoned S. P. No. 2, wildcat well located in sec. 15, 11-19 three miles northeast of the small spot of production in the Grapevine area. During the drilling of the 7326 ft. hole, several formation tests were made with inconclusive results necessitating the setting of casing for conventional production tests. The first test was made with bottom plugged to 6790 ft., where with 8⅝-in. casing cemented at 6650 ft. and a perforated liner landed in the hole, swabbing recovered only water with a scum of oil. The liner was then pulled and the plug drilled out to 7125 ft. A string of 6⅝-in. pipe was cemented at 7020 ft., another liner landed, and the well given a second unsuccessful swabbing test. Before abandoning, casing was perforated from 6930 to 6950 ft. but again recovery was water with a trace of oil and gas. Final abandonment was completed Mar. 16, five months and ten days after spudding in.

Twin Lerdo Tests At Critical Depths

The two active tests of the Lerdo district are approaching critical depths for this area. Deepest of the pair is Shell Oil Co.'s KCL No. 2A-23-2, located in sec. 2, 29-26, which is below 9300 ft. with no showings yet reported.

To the northeast, in sec. 35, 28-26, The Texas Co. is drilling KCL No. 35-1 in sandy siltstone below 8700 ft.

Occidental No. 2 Temblor Failure

Disappointing was a recent test of the second Temblor zone in California Lands, Inc. Occidental No. 2 at Lost Hills. Located in sec. 24, 26-20, west of the Lost Hills field, the first Temblor horizon was encountered at 5535 ft. but hole was carried through to 5604 ft. where a string of 7⅝-in casing was cemented. The second zone was then cored to 5625 ft. and a formation test made of what were considered fair oil sands. The well, however, flowed salt water at an estimated 3000 bbl. rate. The hole has been plugged inside the shoe of the pipe preparatory to perforating and testing the upper zone. Location is approximately 1000 ft. due east of Occidental No. 1 which was abandoned last year at 7343 ft.

Superior Moodie Rigs Giant Equipment

Rigged with the biggest and heaviest equipment ever installed in California, Superior Oil Co. spudded in Moodie No. 1, a north edge well in the Rio Bravo field. Although the company denies any intention of setting any new speed or depth records, there are those in the industry who will be surprised in case the old standards are not broken.

On the south side of the field, General Petroleum Corp. finished Van Ness No. 3 with an initial flow of 1200 bbls. in 15 hours. Shut in with a 10/64-in. bean, production was 340 bbls. of 39 gravity clean oil under 1625 lbs. flow pressure. With 6⅝-in. casing cemented at 11,416 ft., hole was cored to 11,543 ft. and plugged back to 11,485 ft. where a perforated liner was landed.

General Petroleum has two other active projects in the field. Van Ness No. 2 is drilling at shallow depth while Caldwell No. 1 is coring at 11,000 ft.

Shell To Drill Cantua Creek Area

With only a general location announced, Shell Oil Co. is planning a test of Cantua Creek holdings in Fresno County. The proposed project is presumed to lie near the abandoned Western Gulf Oil Co. wells, which encountered encouraging bodies of oil sand. The Shell location is south of the town of San Joaquin and north of the northerly tip of the Coalinga field. Western Gulf drilled S. P. Nos. 1, 2, 3, and 4, the deepest of which was carried to below 8600 ft. A surveyed location will be announced soon.

E. Coalinga Wildcat Drills Below 7400 Ft.

After recovering a stubborn fish, Amerada Petroleum Corp. is again coring ahead in its S. P. L. No. 7-17, wildcat well located in sec. 17,19-16, two miles east of the old Coalinga East Side field. With bottom reported to be in Kreyenhagen shale, depth of the hole is now in excess of 7400 ft. The Gatchell sand, if present in this locality, is expected in the vicinity of 8000 ft.

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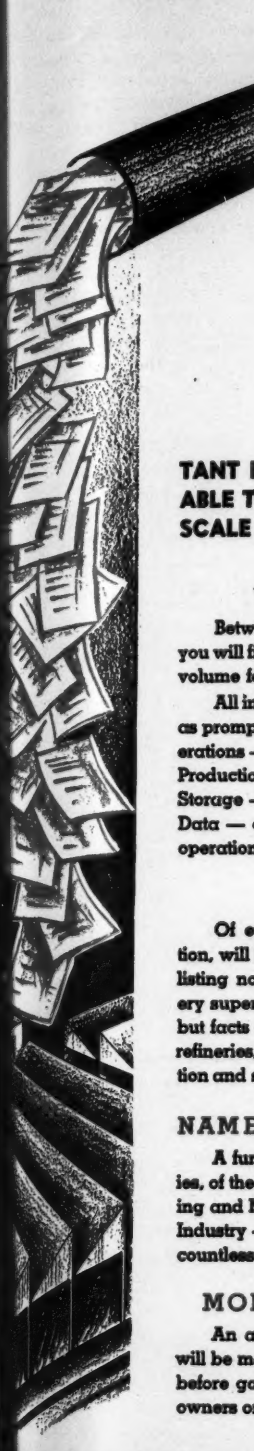

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2nd Well Hits Pay In Richfield-Western Field

Indicating that the trend of the newly discovered Richfield-Western field is probably to the east from the discovery well, Richfield Oil Corp.'s second test, No. A-52-32 topped the Stevens oil sand at 8217 ft., approximately 15 ft. higher than No. A-32-32. With the bottom of the second hole below 8475 ft., the company is preparing to cement a water string prior to completing. Both wells are in sec. 32,30-25.

Standard Oil Co. has erected a derrick for KCL No. 21-1 in sec. 19,30-25.

Atlas Plans Delano Test

A new test of the area west of Delano is planned by a recently organized partnership called Atlas Petroleum Co. A notice of intention to drill in the northwest quarter of sec 7,25-25 has been received by State Oil & Gas Supervisor, R. D. Bush. Officially to be called Moore No. 1, the well will be approximately six miles east of the Trico gas field and four miles west of the townsite of Delano.

Superior Jewett Nears Arvin Sand

P. D. Jewett No. 1, Superior Oil Co.'s southerly offset to the joint producer of Standard Oil Co. and The Texas Co. south of the Mountain View field, is rapidly approaching the newly discovered sands. With characteristic speed the company is drilling below 5000 ft. and within a few more days should be coring for the top of the pay horizon which was encountered at 6070 ft. in the first well.

Standard-Texas Jewett No. 1, which on potential test yielded nearly 3000 bbls. a day of 31.5 gravity clean oil, has been shut in temporarily pending the completion of pipe lines. Both wells are located in the northeast quarter of sec. 16,31-29.

Amerada Tests Sixth Beer Well

With but little encouragement to bottom at 4591 ft., Amerada Petroleum Corp. is making final tests of Beer No. 6 before seemingly inevitable abandonment. The hole is bridged to 4250 ft. where a silty oil sand will be tried with a drill pipe tester. The project is located in sec. 21,26-19, seven miles southeast of shallow Devil's Den production and four miles northwest of Blackwell's Corners.

L. A. Basin A.P.I. Meeting Draws Capacity Crowd

The meeting of the Los Angeles Basin Chapter of the Division of Production of the American Petroleum Institute was held at the Shell Oil recreation hall in Long Beach on Tuesday, March 14.

Bob Cook, president of the Pacific Cementing Company, read an interesting paper on new methods of oil well cementing, picturing the difficulties and improvements in deep hole cementing.

A motion picture, taken partially with color film, was shown through the courtesy of Russel Havenstrite. Mr. Havenstrite's pictures of the Iniskin Drilling Co.'s oil exploration in Alaska were enthusiastically acclaimed by the spectators. Popular demand required the showing of additional and unscheduled reels. The unusual interest in Mr. Havenstrite's exceptionally beautiful photography, embellished orally with his own dry humor, materially shortened the following address by Dr. Yu-Shan-Han of China.

Dr. Han, who holds degrees from both American and Chinese Universities, has done much lecturing on economic and social subjects both here and abroad. His comments were most illuminating on causes and effects of the Sino-Japanese war. Dr. Han is well informed on both sides of the issue and presented an unbiased interpretation of the probable economic consequences of the struggle.

Two reels of authentic war scenes of the Shanghai area followed. An American citizen who formerly operated a business in China showed the films which he and his friends had taken during the siege of Shanghai. The scenes graphically illustrated the enormously destructive effect of modern war upon a metropolitan area.

Coffee and doughnuts served field style, and accompanied by the usual after meeting small talk terminated a successful meeting. D. W. Elliott, chapter chairman who formed and conducted the program, is to be congratulated on a job well done.

Care and use of wire rope was the subject discussed by Roy Southworth of the Columbia Steel Co. at the March meeting of the A. P. I. Topical Committees on Drilling and Production Practice in Los Angeles. Stender Sweeney of the Richfield Oil Corp., chairman of the Committee on Drilling Practice, presided.

Predictions that an oil code for the marketing trade will soon be adopted continue to emanate from Washington, D. C.

Los Angeles Basin

La Merced 30 Opens New Montebello Sands

New possibilities for deep West Montebello production were recently opened with the coring of good oil sand from 7550 to 7640 ft. in Union Oil Co.'s La Merced No. 30, most easterly well in the play. On formation test, oil reached the surface in 30 minutes and flowed at an estimated 600 bbl. rate. It is thought that the hole crossed a fault shortly before picking up the oil sand which is assigned to a lower finger of the Seventh zone not yet opened in the western portion of the field. Deepened to 7780 ft., a formation test obtained only oily salt water. No further tests had been reported to 8000 ft. but engineers familiar with deep wells in other sections of the field were confident that an Eighth and possibly a Ninth zone will be found productive.

Flowing only from the Seventh zone, but mechanically equipped to produce also from the Fourth Finger of the Sixth, McVicar & Rood Manz No. 1 was brought in with initial production estimated at 800 bbls. a day of 40 gravity clean oil. Perforations are open from 7060 ft. to 7080 ft. and from 7100 ft to plugged bottom at 7215 ft. Total depth is 7240 ft.

Herley-Kelley's Burke Community No. 2, another Seventh zone completion, was bottomed at 7235 ft. and swabbed in flowing 41 gravity oil at the rate of 900 bbls. a day.

Finishing Wilcox No. 3 at 6700 ft., Union Oil Co. got a nice well in the lower Sixth zone. Production was reported as 350 bbls. a day through a 14/64-in. bean with 850 lbs. flow pressure.

First Seventh zone well for St. Helens Petroleum Co. will be Monterey No. 30 which has a blank liner cemented on bottom at 7275 ft. It is planned to gun perforate intervals which were shown to be productive by formation tests.

West of the field, Ridge Oil Co. is drilling its wildcat, Sea Cliff No. 1, below 4150 ft. The well has encountered no showings to date.

Torrance Field Maintains Pace

Maintaining its rapid pace, Torrance is still California's most active field. Productive area has not been materially extended of late, the most important outpost, Ray Wilson's No. 3, having encountered trouble in shutting off water with 7-in. casing cemented at 4845 ft. The well, which is only a few feet lower than wells to the north, cored good oil sand to bottom at 5180 ft. and is expected to ultimately become a producer. South of the Wilson well, King Petroleum Co. has spudded its first well and has derrick built for a second. Most southeasterly project is Riviera Petroleum Co.'s Bass & Goodknight No. H-1 which is rigging up.

Most southerly well on Eshelman Ave. to go on production was A. B. C. Oil Co.'s Angelich No. 1, finished at 5200 ft. The project is located at the intersection of 240th St. Half a block east, Alford Oil Co. brought in No. 14 at the initial rate of 50 bbls. per hour. The Del Amo zone was penetrated 400 ft. to 5185 ft.

Several small pumpers resulted from redrilling and deepening old wells in the less active sections of the field, none large enough to stimulate new drilling. North and east of the corner of Sepulveda and Normandie, Campeet Oil Co. has found little encouragement in deepening the old Richfield Oil Co. Kleinmeyer No. 17A. Last reported bottom was 5350 ft.

With the structural high point of the "Hot Spot" now definitely placed in the vicinity of 238th St., close observers of the field are of the opinion that production will not be extended much farther to the south than wells currently drilling. Easterly boundaries may be extended to the D & B area unless faulting plays a larger part than is now suspected.

Wilmington Soon To Top Torrance Activity

Already credited with the highest daily yield of California fields, Wilmington may soon surpass Torrance in drilling activity. At present, 15 strings of tools are running in the field with no sign of let up, while Long Beach Oil Development Co. is said to be planning to start 12 wells at once on the city tidelands. Most of the drilling is in the Long Beach harbor sector, the activity in Wilmington being largely redrilling and deepening jobs.

On a lease quit claimed by Superior Oil Co., Bond Petroleum Co. completed Mutual No. 2 flowing an estimated 300 bbls. from the Ranger zone. The well is located on the north side of Seventh St., west of Pico Ave., on the old Curtis Cannery site. Another successful Ranger completion was obtained by Arthur Haines 500 ft. west of Pico Ave. on Water St. Production was said to have been over 250 bbls. a day.

Again demonstrating its faith in the "Gas House" area south of Anaheim

LOS ANGELES BASIN WILDCATS

Area	Well	No.	Section	Depth	Status
Bellflower	Clayton, Geo. L., Scott	1	32, 3-12	6897	Idle
Castaic	Royal Land Corp.	1	8, 4-17	1338	Idle
La Mirada	John McKeon and Assoc. Carmenita	1	21, 3-11	8990	Idle
Long Beach	Richfield Oil Corp., Montana Land	1	13, 4-12		Rig
Mojave	Mojave Pet. Co., Gorman	1	5, 8-18	510	Idle
	Jennings	2	33, 5-14	520	Idle
Montebello-West	Ridge Oil Co., Sea Cliff	1	3, 2-12	4089	Drilling
Newhall	Mangrum and Page, Lintz	1	4, 3-15	150	Idle
	Newhall Drlg. Asso., Needham	4	13, 3-16	3505	Idle
	Palmluck Oil Co.	1	23, 3-16		Rig
Palmdale	Neu-Cal	1	17, 6-12	1250	Idle
Palos Verdes	Rolling Hills Pet.	1	27, 4-14	5385	Idle
Playa del Rey	Treasure Oil Co.	9	34, 2-15		Rig
Santa Monica	The Texas Co., A-S	1	9, 2-15	7336	Abandoned
San Pedro	Grady, R. T.	1	23, 5-14	650	Idle
Torrance	Blackstone Oil Co.	1	2, 4-14		Grade
Whittier	Langstaff, Geo. W., Iliff	1	8, 2-11	2250	Idle
	H. C. Oil Co., Joyce	1	22, 2-11	3487	Drilling
	C. W. Partridge	1	22, 2-11		Rig
	Orange County				
Anaheim	The Texas Co.	A-13-1	8, 4-10	8406	Drilling
Bolsa Chica	New Fields Oil Co.	1	16, 5-11	4180	Abandoned
	Patos Drilling Co.	1	21, 5-11	5429	Idle
Costa Mesa	A. V. Oil & Gas Co.	1	16, 6-10	4751	Idle
Kraemer	Congress Oil Co.	2	36, 3-9		Foundation
Seal Beach	Union Oil Co., Nietos	1	12, 5-12		Rig
	San Bernardino				
Carbon Canyon	Carbon Canyon Oil Co.	1	30, 2-8		Rig
Chino	So. Counties Pet. & Drlg. Co.	1	22, 2-8	2830	Idle
	San Diego County				
Carlsbad	Dauphin Dev. Co., Kelly	1	16, 12-4	1201	Idle

Blvd. and near the westerly city limits, Allied Petroleum Corp. is preparing to drill a new well, No. 31. Previous wells here have produced up to 450 bbls.

The first two of eighteen wells to be bottomed under the harbor channels are being completed by Signal Oil Co. Both are drilled on sites owned by Union Pacific Railroad and are whipstocked to their predetermined sub-surface locations.

In the matter of overproduction, Wilmington remains the worst offender; its 16,000 bbl. excess amounting to more than half of the State's 28,000 bbl. overage.

6th Well Scheduled For Newhall-Potrero

With Rancho San Francisco No. 5 nearing its final depth at 7100 ft., Barnsdall Oil Co. is grading a rig site for No. 6 in the Newhall-Potrero field. Barnsdall, which controls the entire field, runs only one string of tools which will be moved to the new well when No. 5 is completed.

Two Wells Finished In Rosecrans Field

Two completions were the recent highlights of the Rosecrans field. South and east of the corner of Rosecrans and Main St., Barnsdall Oil Co. finished Rosecrans No. 12 as a gas lift producer. Bottomed at 7668 ft., production is 160 bbls. a day cutting 10.0%.

North and west of Rosecrans and Figueroa, Universal Consolidated Oil Co. obtained a 400 bbl. flow in Trust No. 10. No. 15 on the same lease has been spudded and locations have been surveyed for Nos. 16 and 17.

West of Universal's Trust property, Wilshire Oil Co. will soon start work on Leitch No. 1, the trouble with the county planning board having finally been settled. The property, it seems, is in line with a projected extension of Hoover St.

Richfield Starts Montana Land 'Cat

North of its Signal Hill main camp, Richfield Oil Corp. is rigging up to drill an exploratory well on property of the Montana Land Co. Located on the basis of a seismographic survey, the project will be watched with interest by the oil fraternity and with ire by residents and realty promoters in the vicinity who have bitterly opposed its drilling. Situated north and east of the intersection of Cherry Ave. and Bixby Rd., the well is a little over a mile north of production in the Signal Hill field.

Dragon Disappoints At H. B. Five Points

Disappointing to those who held high hopes for extension of Huntington Beach Five Points production were results of pumping tests of Dragon Oil Co.'s Jauman No. 1. With 8⅝-in. casing cemented at 4557 ft. and a perforated liner landed on bottom at 4624 ft., continued pumping resulted in the recovery of only muddy water with a trace of oil. Other projects in the vicinity, meanwhile, are standing idle.

Within the old Huntington Beach field, The Texas Co. has been struggling with water trouble in its newly drilled Brown No. 10. Bottom has been plugged from 3784 ft. to 3440 ft. and the liner has been squeezed at 2950 ft. as remedial measures.

In the ocean front area, Wilshire Oil Co. redrilled two old wells, Nos. 2 and 15, and obtained about 400 bbls. in each. Bottoms are 5450 ft. and 5403 ft. respectively.

Southwest Exploration Co. finished No. 9 on the State Tideland lease pumping 300 bbls. Nos. 10 and 11 are nearing final depths.

Long Beach Awards Harbor Drilling Contract

Culminating over two years of legal red tape, the City of Long Beach recently awarded the harbor drilling contract to Long Beach Oil Development Co. The lands involved total 269 acres and extend along the shore from the county Flood Control Channel to the westerly city limits. Wells will be drilled from sites on filled ground and bottomed under the waters of the outer harbor. Long Beach Oil Development Co. will act in the capacity of drilling and operating contractor, receiving, in effect, 15% of the gross after payment in full for all costs. Wells must be drilled whenever and whereever designated by the Harbor Commission. Present plans call for 12 projects to be started at once with 108 tentatively set as the ultimate number. Recoverable oil under the tidelands has been estimated at 50,000,000 bbls.

Long Beach Oil Development Co. is comprised of a number of old and well established operators including several major companies. Listed as officers are Will J. Reid, (Hancock) president and J. Howard Marshall (Standard) secretary. Directors include the foregoing and John W. Hancock and E. E. Pyles of Hancock Oil Co., and S. B. Mosher and H. J. March of Signal Oil Co. Independent companies represented are The Termo Co., Hancock Oil Co., Signal Oil Co., Apex Petroleum Co. and A. N. Macrate.

Tide Water Starts Four Aliso Canyon Wells

Having received permits from the Los Angeles City planning board, Tide Water Associated Oil Co. is starting four new wells in the Aliso Canyon field it discovered last fall. Grading is under way for Fernando No. 1 and for Nos. 3 and 4 on the Porter lease. Porter No. 12 is scheduled for early work. The Fernando property adjoins the Porter on the east.

Deepest of the three drilling wells in the field is Porter No. 2 which is making hole below 4500 ft. Standard Oil Co.'s Ward No. 1 has passed 4150 ft. while Union Oil's Santa Susana-Orcutt No. 27-1 was reported at 3375 ft.

Victorville Well Planned By Maj. Cummings

Major J. A. Cummings of Riverside is planning to drill a wildcat well adjoining the site of the old Luval well in Lucerne Valley about 12 miles west of Victorville in San Bernardino county. Although considerable doubt exists as to authenticity of showings reported in the old well, the Major is convinced that another test is warranted. Derrick is scheduled to be built immediately in the northwest quarter of sec. 21, 5n-6w.

D & B Drills Fourth In Torrance Extension

D & B Oil Co., discoverer of the Torrance Extension area, has spudded in its fourth well. Located near the intersection of 253rd St. and Vermont Ave., the project is reported below 2875 ft. in depth.

The Texas Co. finished Oakley No. 4 as a 175 bbl. clean oil producer and is moving equipment to No. 5. General Petroleum's Poggi No. 14 is approaching 4500 ft. in depth.

Texas Gives Up Santa Monica Well

Failing to find production in the redrilled hole, The Texas Co. has abandoned Anderson-Spring No. 1 at Santa Monica. The first hole was carried to 7285 ft. and was said to have entered the schist basement at approximately 7225 ft. No production being encountered, the well was plugged and redrilled directionally from 3200 ft. A formation test to gray sand at final bottom of 7335 ft. recovered only salt water.

Oil was first shipped over land in 1790 by Nathaniel Cary who slung two five-gallon kegs over the saddle and rode from Oil Creek to Pittsburgh, Pa., about 80 miles away. He traded the oil for provisions.

Coastal District

Two Santa Maria Wells Completed

Two of the four wells started in the recent Santa Maria field revival have been completed. First of the group was E. H. Moore's No. 11 in the westerly portion of the field. Bottomed at 4616 ft., and with 205 ft. of formation open, the well was pumped in at the rate of 290 bbls. The gravity of 16 is considered exceptional. Fifteen feet of Franciscan was penetrated.

Second to go on production was Geo. F. Getty, Inc. Vicente No. 8, located in the erstwhile hot spot, section 27. With 480 ft. open to bottom at 4980 ft., the well was produced only a few hours at the rate of 500 bbls. before shutting in. Top of the Monterey was placed at 4480 ft. while the Franciscan was entered at 4955 ft.

Gerard & Thompson are drilling their first well, Berneiser No. 1, below 4960 ft. in sec. 27, while E. H. Moore, Inc. is making hole in Union Sugar No. 12 below 4870 ft.

Richfield Explores San Marcos Area

Announcement of one of the coastal area's most interesting wildcats was recently made by Richfield Oil Corp. To be known as San Marcos No. 1, the new exploratory project will be drilled in sec. 20,6-29, approximately 2500 ft. north and 5500 ft. east of the southwest corner of Rancho Tequepis.

Relatively little drilling has been done in the vicinity of the Richfield play, the nearest being the abandoned San Lucas Oil Co. hole three miles to the west and the Elliot & Clarke well five miles to the northeast. Both old holes were carried to 3600 ft.

Two Wells Drill In Rincon Field

Only two wells are now active in the Rincon field. On the "Steel Island," Rincon Development Co. is drilling Permit No. 82-4 at an estimated depth of 1750 ft. On terra firma, Chanslor-Canfield Midway Oil Co. is coring oil sand below 4200 ft. after noting the Miley shale marker at 3800 ft. in well No. B-25.

Tar Creek

Section 20 Oil Co. cemented 8⅝-in. casing at 2537 ft. but water broke in while drilling ahead. Total depth is 2555 ft.

Monterey 'Cat Below 2100 Ft.

Seemingly having overcome the loss of circulation trouble which seriously hindered progress, The Texas Co. is now drilling below 2100 ft. in its Monterey county wildcat, Arroyo Seco No. 1 in sec. 11,19-5.

Grubb 10 Flows 2800 At San Miguelito

With an initial flow estimated in excess of 2800 bbls., Continental Oil Co. completed Grubb No. 10 in the San Miguelito field. Total depth of the well is 7035 ft.

In the nearby Padre Canyon field, Chanslor-Canfield Midway Oil Co. recompleted No. A-6 pumping 90 bbls. a day with a water content of 5.0%. Well No. A-7 has been spudded in and surface casing set at 275 ft.

Operators Plan Hopper Canyon Work

If plans of several operators materialize, Hopper Canyon will be the scene of renewed activity this spring. Interest centers at the present time in the vicinity of sections 13 and 14 of 4n-19w where at least two wells are scheduled for drilling within a few weeks.

NORTHERN COUNTIES WILDCATS

County	Well	No.	Section	Depth	Status
Monterey	Anderson, A. A., Hillman	1	15, 24-14	4004	Idle
	The Texas Co., Arroyo Seco	1	11, 19-15	2096	Drilling
Santa Cruz	Faria, Joseph Jr.	1	12, 11-3		Location
	Hatcher, Homer	1	8, 9-1		Location
Stanislaus	Santa Maria Pet. Co.	1	34, 1-10	2310	Idle
Sutter	Buttes Oilfields, Inc.	5	1, 15-1		Rig

COASTAL COUNTIES WILDCATS

Area	Well	No.	Section	Depth	Status
Santa Barbara County					
Capitan	Litho Oil Co., Rhode I.	1	4, 4-30	1320	Drilling
Carpinteria	Western Oil Royalties	1	32, 4-25	2023	Testing
Foxen Canyon	Richfield Oil Corp., Tinaquaic	1	36, 9-32	4781	Drilling
Gaviota	Gaviota Oil Co., Hollister	1	35, 5-33	3215	Idle
Gato Ridge	Barnsdall Oil Co., Mag.	5	9, 8-32	4385	Pumping water
	Pezzoni	1	15, 8-32	4494	Idle
	The Petrol Corp., Tognazzini	1	9, 8-32		Rig
Los Olivos	General Petroleum Corp., Chamberlin	1	12, 7-31	3144	Drilling
	United Western Oil Co.	1	15, 7-30	3523	Drilling
San Marcos	Richfield O. Corp.,San Marcos	1	20, 6-29		Location
Summerland	Garman Oil Co.	17-1	22, 4-6	1487	Idle
	Oil Group, Inc., Hyland	1	16, 4-26	550	Drilling
San Luis Obispo County					
Edna	Loma Grande Oil Co., Lewis	1	28, 31-13	2125	Idle
Elk Horn	Calif. Pet. Prod., Irons	1	19, 10-24	1870	Idle
	Newton, S. M., Stafford	1	18, 31-21	995	Fishing
Huasna	Hancock O. Co.,Scherer-Dickes	1	30, 12-33	5593	Idle
Paso Robles	Vanguard Oil Co., Clark	1	26, 27-14	4951	Idle
	Epco, Inc.	1	27, 26-13	4791	Drilling
Ventura County					
Ojai	High Mesa Oil Co.	1	16, 4-22	1770	Testing
Red Mountain	Martin, J. W.	3	15, 4-21	1260	Idle
Sespe	Drain Oil Co., Cosby	1	14, 4-19	1120	Idle
	Claran Oil Co., Hardison	1	22, 4-20	2940	Idle
	Commander Oil Co.	7-F	13, 4-19	575	Idle
	Merchants Pet., Cochran	8	1, 4-20	1766	Drilling
	Renard Oil Co.	1	6, 4-19		Rigging rotary
Shiells Canyon	Shomy Oil Co., Shomy	1	32, 4-19	220	Drilling
South Mt.	Clipper Oil Co.	1	17, 3-20		Rig
Tar Creek	Section 20 Oil Co.	1	20, 5-19	2550	Drilling
Timber Canyon	Stallings, Senter, Ahlberg	1	24, 4-21	1445	Idle
Ventura	Ventura Drilling Co.	1	10, 3-23	2285	Idle
	Ventura Exploration Co., Sexton	1	30, 3-22	9511	Idle
Wheeler Canyon	P & M Oil Co.	1	24, 4-22		Grade

Harold T. Wyatt

Harold Wyatt, who was recently made production manager of Shell Oil Co., joined Shell in 1925 as a draftsman. In 1926 he was transferred to the engineering department. Rising steadily he was made chief exploitation engineer in 1934 and manager of San Joaquin division at Bakersfield in 1937.

Gato Ridge Well Pumps Only Water

Yielding only water, Barnsdall Oil Co. recently put Magenheimer No. 5 on the pump at Gato Ridge. The well, an outpost, is bottomed at 4385 ft.

Continuing its development program in the field, The Petrol Corp., is preparing to drill Tognazzini No. 32-A.

Carpinteria Well Tests Gas Showing

Western Oil Royalties, Ltd., is conducting a series of tests to determine the possibilities of gas showings encountered in its Bryce No. 1 at Carpinteria. Bottomed at 2025 ft., the drilling mud has shown evidence of gas in the last 150 ft. of hole. Located west of the townsite, the well is approximately a mile from the group of wells drilled several years ago by Continental Oil Co., one of which suffered a gas blowout.

Additional Basin

2 Tests Active In Orange County

Only two wildcat wells are now active in Orange county. West of Anaheim, The Texas Co. is drilling below 8400 ft. in No. A-13 after passing through several unsaturated oil sands. Formation tests have revealed nothing of commercial value.

Union Oil Co. is installing drilling equipment in its Nietos No. 1, located a mile inland from the town of Seal Beach. The well seeks a new field in the Signal Hill-Huntington Beach line up.

Basin Reams Potrero Well

With the probable intent of running a liner to complete, Basin Oil Co. is reaming No. 4 at Potrero. From the casing shoe at 4822 ft. to bottom at 4924 ft., core recovery has been shale with streaks of light gray oil sand. Basin is the most successful of the many companies who, in the past 12 years, have attempted to make a commercial oil field of the Potrero Country Club golf course.

Whittier Test Below 3500 Ft.

Seeking deep production in the old Whittier field, H. C. Oil Co. is drilling its Joyce No. 1 below 3500 ft. Location of the well is in the Whittier College area.

Geo. Langstaff & Associates are planning another test of the Whittier district.

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They are more than long-lived, fully salvable steel structures—they are real aids to fast, safe, economical drilling. They give the entire drilling structure the rugged stability and rigidity without which oil well drillers could not have established such amazing records as are now accepted as commonplace.

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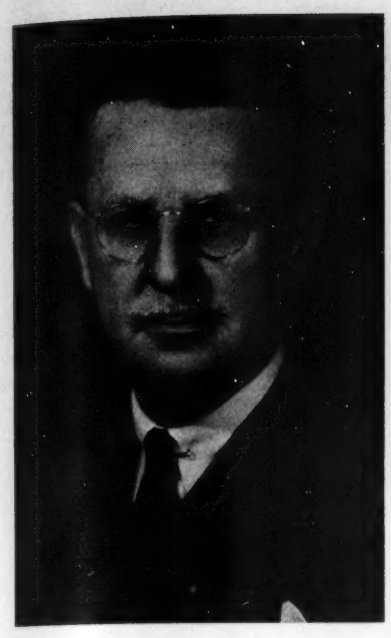


Clifford W. Lord

Lord Appointed Manager Oil Well California Sales

An announcement of considerable interest to the western oil industry has just been made by Lester Keim, vice president of Oil Well Supply Co. in the appointment of Clifford Lord as manager of California sales.

Cliff Lord has been active in the western oil industry since his graduation with a degree of mining engineer from the University of California in 1911. His first oil connection was of that year with the Associated Pipe Line Co. In the following year he became associated with Captain John F. Lucey in the Mid-Continent, as general manager of the Lucey Manufacturing Corp. He spent six years in the Mid-Continent and Eastern fields. In 1922 Cliff Lord became associated with Buck & Stoddard as vice president in charge of sales, and was associated with this company until 1932 when he resigned to take the presidency of Bolsa Chica Oil Corp.

Cliff Lord is a native son, born in Grass Valley, Calif. He is a member of the California Club, and the Bohemian Club in San Francisco. He is well known among leading California sportsmen as well as oil men. Cliff's many friends in the oil industry will be happy to learn of this appointment, and he will carry with him in this new position of responsibility their very best wishes.

Warner F. Parker

James B. Graham

National Tube Executive Sees Coast Business Upturn

James B. Graham, assistant general manager of sales for National Tube Co. is on the Pacific Coast, cooperating with Warner Parker, manager of tubular sales for Oil Well Supply Co. in California and others of the organization in furthering the sales of his company's products.

Mr. Graham, who reports business as being very good in California, views the outlook for 1939 in the State with considerable optimism. Contrary to earlier predictions, he points out, activity in proven fields as well as in numerous new wildcat areas, is decidedly on an uptrend.

Tetraethyl lead was discovered in 1859.

As entertaining as they come was the Annual Dinner Dance of Oil Well Supply Co., St. Patrick's Day, in Los Angeles. Highlighting the festivity was the duet by Al Lasken and Warner Parker. The party, attended by more than 125 officers, employes, relatives and friends of "Oilwell", was arranged by C. A. Morrow. Mr. Lasken acted as Master of Ceremonies. The annual event requires considerable preparations and much of the credit for its success is given to Catherine McNeill, Frances Gerrell, Martha Livingston, and Doris Teters.

Patterson-Ballagh Pipe Wiper

Patterson-Ballagh offer the newest addition to their family, the Patterson-Ballagh Pipe Wiper, an ingenious and inexpensive device. It is claimed by the makers, the Patterson-Ballagh Corp. of Los Angeles, to effect a great saving in mud, weight material and water. Safety on the floor and in operations is also effected.

The mud wiper is a flat reinforced disc of seamless rubber with a hole in the center of a flexible web, through which the drill pipe or tubing is pulled. The rubber is of the same quality as is used in the manufacture of Patterson-Ballagh Casing Protectors, Open Hole Stabilizers, Wire Line Guides, Swivel Bumpers and rubber lined Nozzles. It is a very uniform wear resistant rubber, claimed by the makers to be of the highest tensile strength offered the oil industry today.

The hole in the center of the Pipe Wiper is slightly smaller than the diameter of the pipe, and, as there is no break in the web, the mud or oil is "squeegeed" from the surface very completely.

The web is so flexible that tool joints and protectors pass through without trouble.

As no water is needed, there is no dilution and therefore no mud or weight material is added to compensate, a saving some operators claim runs from twenty to fifty dollars per "trip."

The inside edge of the wiper is beaded to increase the wiping effect, increase its life and decrease the danger of tearing.

A flat metal disc is fabricated inside the outer edge so there is strength without exposed metal. There is therefore no metal contact to cause a fire hazard by sparks. There are no exposed bolts to catch and tear the web.

As the disc is of considerable diameter (17" in the larger size) it effectively protects the hole, and reduces the danger of dropping tong dies, hammers, chisels, etc. therein.

The pipe wiper is easily slipped over the drill pipe and thereafter floats freely thereon. It is held down by the master bushing. Its installation or removal is a matter of minutes.

The pipe wiper is made in two sizes, the 14" diameter for 2⅜" 2⅞" and 3½" tubing and drill pipe. The 17" diameter size is for sizes from 2⅜" to 6⅝" inclusive.

To summarize the advantages and features of the Patterson-Ballagh Pipe Wiper:

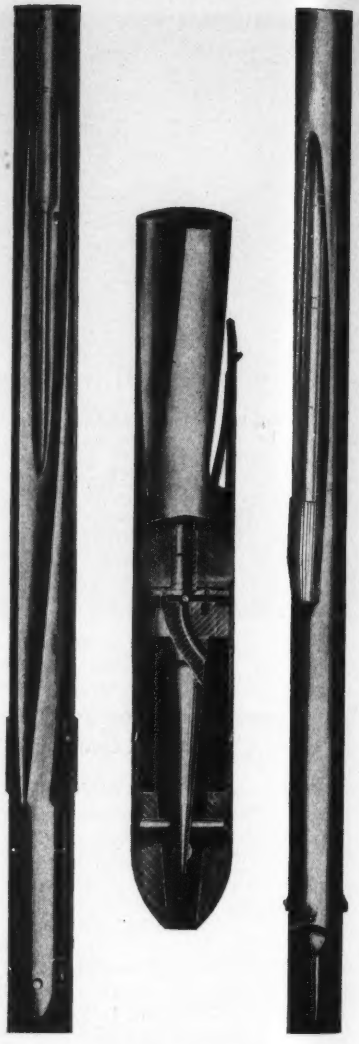
1. Saves mud and weight material.
2. Saves water where this is an item.
3. Makes the rig more safe as floors are not wet or muddy, and dry pipe is easier and safer to handle.
4. Reduces volume of mud in circuit.
5. Less danger of mud being diluted to the "blowout" point.
6. Covers hole, reduces danger of dropping hammers, chisels, tong dies, etc., into well.
7. Flaws in drill pipe or tubing more easily found.
8. Ice does not form on dry pipe and is reduced on floor in freezing weather.
9. No sparking against master bushing thus reducing fire hazard.
10. Adapted to strip oil from tubing.
11. Reduces cuts and infections on men's hands.
12. Applied or removed almost instantly.
13. Strips mud from geophysical rigs where water is at a premium.

New Eastman Casing Whipstock

A new type of permanent Casing Whipstock that is set in the pipe by hydraulic pressure, and is especially designed to facilitate milling a window out through any grade of casing for sidetracking, deflecting, or straightening a cased well is now being offered by the Eastman Oil Well Survey Co.

This whipstock has a long, tapered face with a setting tool tube entering and passing through the face, down to a left-hand threaded connection on the lower section. In the hydraulic chamber below the tapered part is a piston mandrel encircled by a piston rubber. A circulation arresting ball, which is dropped inside the pipe, seats on the circulation bore of the piston when circulation is stopped. The piston mandrel is tapered to a point within the shoe. Four heavy looking pins, which are set radially and at tight angles to one another, are forced out through the casing by the tapered mandrel piston when pump pressure is applied. A groove is provided around the mandrel to lock the piston and pins in the set position at the end of the down stroke.

The casing whipstock is made up on the drill pipe by means of the left-hand threaded setting tool. The whipstock may be oriented into the hole or run without orientation. When the whipstock is between casing collars at the desired depth, the drill pipe is filled with fluid and the arresting ball is dropped. The ball seats in the circulation hole of the piston and stops downward circulation. Pump pressure is then applied, forcing the piston down, which, in turn, drives the pins outward into the casing. When the pins are driven through the casing, the piston passes the lower by-pass opneings allowing circulation to be regained, and locks the piston and pins in place. The drill pipe is then rotated to the right and the left-hand collar releases the whipstock from the string of drill pipe. A good mill, preferably a core mill, is then employed to mill a "window" through the wall of the casing.



The Eastman Permanent Casing Whipstock is run and set without employing shear bolts, springs, or slips and does not require bridges or plugs to set or land on. It is then set firmly and securely by hydraulic pressure. Circulation can be maintained through the whipstock.

The four pins driven through the casing serve as a positive and permanent lock, the manufacturer states, and the by-passing of circulation gives absolute proof that the whipstock is set and locked. The long, smooth taper of the whipstock face facilitates the milling operation and insures a gradual deflection of the pipe through the casing window.

S. F. Bowser & Co. Acquires Bassler Meter

S. F. Bowser & Co. of Fort Wayne, Ind., have recently acquired the exclusive manufacture and world's sales rights of the Bassler Meter, formerly manufactured by the American Liquid Meter Co., Alhambra, Calif.

The Bassler Meter has been extensively used during the past seventeen years in the petroleum industry for use in measuring crude oil at the well, for handling refined gasoline and other products for pipe line use, and application where the liquids flow under high pressure.

The Bassler Meter has proved especially desirable for oil well and pipe line use because of its unique feature of compensating measurement automatically to a 60° basis regardless of the temperature at which the liquid flows through the line; and because of the sampling device, which permits a small quantity of liquid to be discharged into the sampling container at each stroke of the meter piston—thus providing a representative, average sample of the liquid discharged.

The Los Angeles office of S. F. Bowser & Co. will be moved to Alhambra into the building formerly occupied by the American Liquid Meter Co., serving both as district office and factory. Fred C. Farmer, sales manager of the former American Liquid Meter Co., will join the Bowser organization with headquarters at Fort Wayne, Ind., as assistant sales manager, Bassler Meter Division. C. J. Bassler, inventor of the meter, will remain at the Alhambra plant in the capacity of chief engineer.

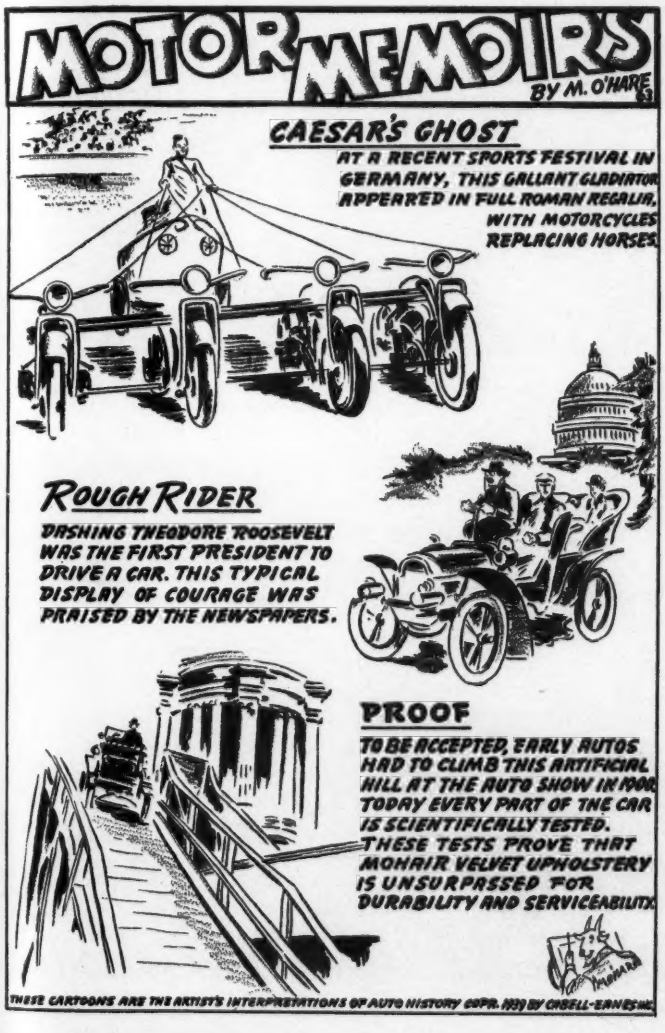
To the already wide and well known line of Bowser meters, extensively used in the petroleum and numerous other industries, the acquisition of the Bassler Meter now makes the Bowser line the most extensive in the world—as it now serves oil wells, pipe lines, and refinery operators, in addition to the loading and unloading of barges, checking deliveries into bulk plants, for truck loading, for truck deliveries, used in filling station pumps, for barrel and can filling, and for use on automobile motors to check fuel consumption. In other words: measuring petroleum products every step of the way, from the ground to the atmosphere . . . in numerous sizes and types, with capacities ranging from a quart an hour to 210,000 gallons per hour.

Telemetering Device

A new bulletin No. 194-A "Bailey Synchro-Meter" is now available from Bailey Meter Co., Cleveland, Ohio. It presents a simple electrical mechanism which is said to accurately transmit and indicate, record or integrate the measure of any factor, such as flow, level, pressure and temperature at a distant point.

This 16 page bulletin points out that metering equipment operated on this principle has accuracies equivalent to mechanically operated metering equipment; that the device actually operates as a torque amplifier which does not send any reaction back to the transmitter; and that the system is not affected by any ordinary variations in voltage or power factor.

Wiring diagrams illustrating the principle of operation are included.


MOTOR MEMOIRS
BY M. O'HARE
CAESAR'S GHOST
AT A RECENT SPORTS FESTIVAL IN GERMANY, THIS GALLANT GLADIATOR APPEARED IN FULL ROMAN REGALIA, WITH MOTORCYCLES REPLACING HORSES.
ROUGH RIDER
DASHING THEODORE ROOSEVELT WAS THE FIRST PRESIDENT TO DRIVE A CAR. THIS TYPICAL DISPLAY OF COURAGE WAS PRAISED BY THE NEWSPAPERS.
PROOF
TO BE ACCEPTED, EARLY AUTOS HAD TO CLIMB THIS ARTIFICIAL HILL AT THE AUTO SHOW IN DOOR. TODAY EVERY PART OF THE CAR IS SCIENTIFICALLY TESTED. THESE TESTS PROVE THAT MOHAIR VELVET UPHOLSTERY IS UNSURPASSED FOR DURABILITY AND SERVICEABILITY.
THESE CARTOONS ARE THE ARTIST'S INTERPRETATIONS OF AUTO HISTORY COPR. 1939 BY CISELL-EARNSHAW

California Crude Oil Production

Two Weeks Ended March 11, 1939

	March Daily Quota	Average Daily Production	Excess
San Joaquin Valley			
Belridge—North	14,220	12,915	*1,305
Belridge—South	1,975	1,176	*799
Buena Vista	16,690	17,212	522
Canal	4,485	4,578	93
Coalinga-East(Eocene)	3,482	3,190	*292
Coalinga—East-West	15,883	6,923	*8,960
Coffee Canyon	2,680	2,830	150
Edison	2,390	2,514	124
Elk Hills	7,565	10,097	2,532
Fruitvale	6,830	7,611	781
Greeley	2,100	1,670	*430
Kern Front	7,645	7,028	*617
Kern River	5,740	2,579	*3,161
Kettleman No. Dome	55,495	56,585	1,090
Lost Hills	4,175	3,344	*831
McKittrick	3,840	3,687	*153
Midway	41,175	33,546	*7,629
Mount Poso	13,120	13,415	295
Mountain View	8,300	8,817	517
Rio Bravo	6,905	8,158	1,253
Round Mountain	8,640	8,995	355
Ten Section	9,085	8,770	*315
Wasco	610	642	32
Other Fields	2,480	2,703	223
TOTAL	245,510	228,985	*16,525
Coastal Counties			
Elwood	4,400	4,711	300
Rincon	2,895	3,048	153
Santa Maria	5,950	2,966	*2,984
Gato Ridge	2,060	2,839	779
Santa Maria Valley	18,800	10,667	*8,133
Santa Paula-Newhall	5,255	5,025	*230
Ventura Avenue	31,365	34,234	2,869
Other Fields	5,490	5,185	*305
TOTAL	76,215	68,675	*7,540
Los Angeles Basin			
Alamitos-Seal Beach	7,150	7,388	238
Brea-Olinda	8,465	5,690	*2,775
Coyote—East	2,805	2,601	*204
Coyote—West	7,770	8,048	278
Dominguez	18,500	21,767	3,267
El Segundo	3,455	3,765	310
Huntington Beach—New and Old	24,860	26,848	1,988
Inglewood	12,550	12,440	*110
Long Beach	41,465	49,435	7,970
Montebello	5,994	6,080	86
Montebello-West End	5,376	9,205	3,829
Playa del Rey	4,900	5,410	510
Richfield	7,465	8,307	842
Rosecrans-Athens	9,970	15,977	6,007
Santa Fe Springs	26,855	28,904	2,049
Torrance	18,775	22,192	3,417
Wilmington	68,885	84,299	15,414
Other Fields	3,160	3,223	63
TOTAL	278,400	321,579	43,179
STATE TOTAL	600,125	619,239	19,114

*—Shortage.

Perry Kilsby Represents Four Well Known Lines

After 17 years with The Babcock and Wilcox Organization, Perry Kilsby has opened his own offices at 605 West Olympic Blvd., Los Angeles, Calif., as a representative of the products manufactured and sold by The Babcock & Wilcox Tube Co., Beaver Falls, Penn.;

Perry Kilsby

Carlan Tool Co., Elizabeth, N. J.; William F. Klemp Co. of Chicago, Ill.; and Sivyer Steel Casting Co. of Milwaukee, Wis.

For the past 12 years Mr. Kilsby has been active in sales work in various capacities for The Babcock and Wilcox Tube Co., whose products are well known in this territory. Seamless Steel and Alloy Tubular Products for pressure and mechanical purposes have been pioneered by this concern and several of the very popular Alloy Steel Grades for high temperature, corrosion and pressure services have been developed by the metallurgical staff of this company.

The Carlan Tool Co. manufactures an inexpensive efficient tool for refacing flat seat and regrinding type Globe valves. Expensive losses through leaky valves can be eliminated in a very few minutes time and if desired, without removing the valve from the line in which it is installed. This tool will be marketed through jobbers in order that proper service can be rendered to its users.

William F. Klemp Co. manufactures "Diamond" and "Klemco" Grating and "Hexteel" Surface Armor. The Grating is used for platforms, stairways, trench covers, etc. The "Hexteel" Surface Armor has a variety of applications. Its primary use is as a reinforcement or binding for concrete, mastic and similar plastic materials in relaying and repairing existing floors. A more recent use is as a reinforcement for holding of plastic liners in refinery pressure vessels.

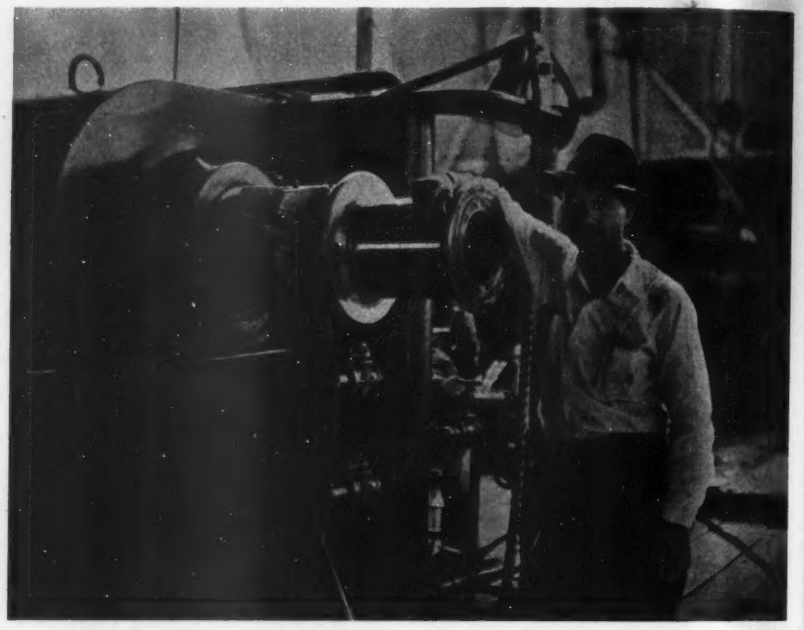
Sivyer Steel Casting Co. has for years been a leading producer of quality castings in all types of metals. Sivyer has held an enviable position in the development of low and high alloy castings for refinery use such as headers, junction boxes, tube supports, etc. They are prepared to furnish the conventional type of headers as well as a "Safety Uniflow" sectional fitting in addition to headers designed by the refinery company engineers.

In 20 years cracking has conserved 15 billion bbls. of crude oil in the United States.

Wittich H. C. Smith Oil Tool Export Sales Representative

Appointment of Val R. Wittich, Jr., as export sales representative for the H. C. Smith Oil Tool Co., Compton, Calif., has been announced by R. C. Smith, vice president of the company. Mr. Wittich maintains headquarters for his foreign sales organization at 30 Rockefeller Plaza, New York, and will handle the complete line of H. C. Smith drilling tools.

Cracking and polymerization produces 100 octane gasoline.



A new type of cathead is proving successful in the deep fields. The cathead is water-cooled.

Now they are even wrapping natural gas pipe lines in cellophane.

Barrere Joins Lummus As Process & Sales Engineer

Clement A. Barrere has resigned as manager of the Bradford Oil Refining Co., Bradford, Penn., to join the Lummus Co. as process and sales engineer.

Clement A. Barrere

Mr. Barrere, who was manager of the Bradford Oil Refining Co. for two years, has had wide experience in refining and particularly in cracking, lubricating oils and asphalt. Prior to his association with Bradford, he was in charge of lubricating oils for Phillips Petroleum Co. Previous to the Phillips connection, he was for 10 years with the Texas-Pacific Coal and Oil Co., Fort Worth. A native of New Orleans, Mr. Barrere is a graduate chemical engineer, Louisiana State University. Mr. Barrere will make his headquarters at the Lummus main office, 420 Lexington Avenue, New York City, N. Y.

Security Left Hand Releasing Tool Bulletin

Full particulars concerning the new Security Left Hand Releasing Tool are now available to oil operators in a Bulletin just issued by Security Engineering Co. Inc., Whittier, California, manufacturers of the device.

This tool brings to the oil industry an improved method of setting oil well liners and accessories, and assures positive releases regardless of the weight placed on the liner or the weight of the liner itself. This advanced operating principle is fully explained and illustrated in the Bulletin, together with descriptions and illustrations of the Security Delayed Action Packer Setting Tool and the Security Delayed Action Lead Seal Packer, both of which are used in conjunction with the Left Hand Releasing Tool. The Delayed Action Packer offers

a number of important advantages over conventional packers and is available either in steel or "Securaloy", the drillable oil field metal.

This new Bulletin can be obtained by writing to the Security Engineering Co. Inc., at Whittier, California.

English orchids, flown to South Africa, arrived dewey fresh for a flower show at Durban.

Chemical Formulary, 1939

The Chemical Formulary, new 1939 edition, is a real gold mine of fascinating useful information enabling you to have at your finger tips the boiled down essence of the very latest commercial methods of hundreds of chemists, engineers, technicians and professors.

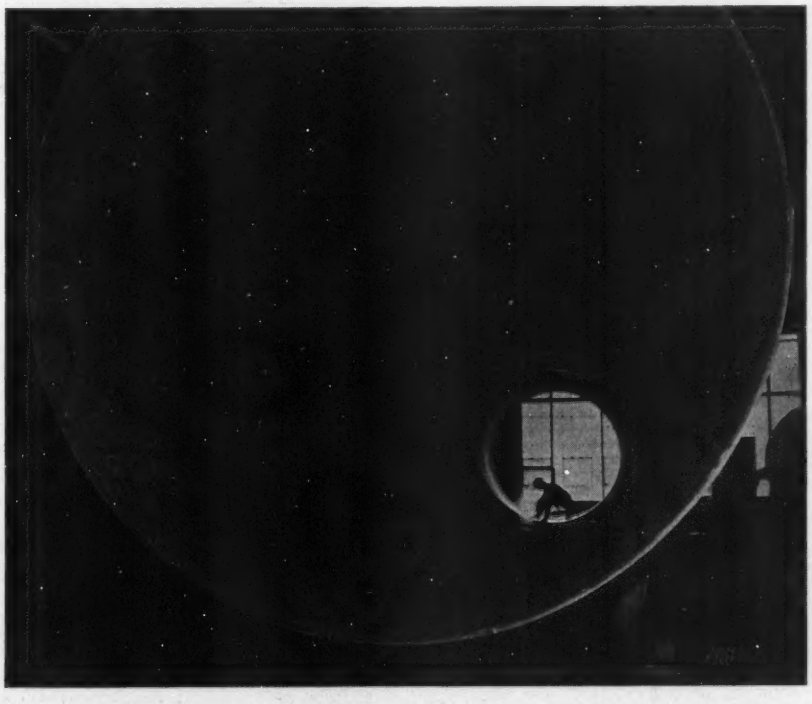
Each chapter has more formulas and practical methods than any other book devoted entirely to the subject.

Complete in every detail, this new edition gives you not only ingredients and quantities of each to use, but explains in full every step in the production of the finished material. These complete directions are your assurance of successful results. They are so clear that anyone can apply them.

The publisher is Chemical Publishing Co., Inc., 148 Lafayette St., New York City. The price is $6.

Feed Water Control

A 16-page bulletin No. 105 entitled "Three Element Feed Water Control" has been issued by Bailey Meter Co., Cleveland, Ohio. It describes a system of feed water control, which accurately measures Feed Water Flow to the boiler, Steam Flow from the boiler and Boiler Water Level and which functions to control feed water input so that it equals steam output at all times.

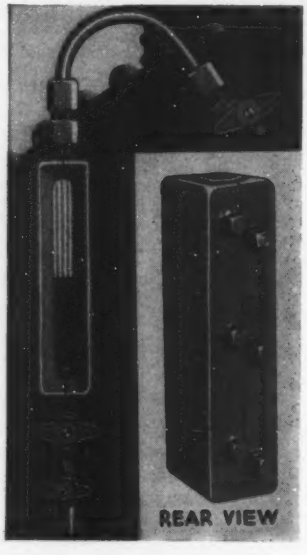


The arc welder is dwarfed inside the tunnel-like shell of a flash chamber for oil refining being built in the A.O. Smith Corp.'s Milwaukee plant for foreign shipment. It is Smithlined throughout with spot-welded chromium alloy steel sheets with the patented Smith construction. The shell is 80 ft. long and 9 ft .in diameter. Photo courtesy of A. O. Smith Corp.

New "Clamp Type" Reflex Gauge Offered

A new "Clamp Type" Reflex Gauge is now available to the oil industry at supply stores and is made by The Inferno Co., Shreveport, La.

Each side of the new gauge is completely housed by one of the two clamps. They can be removed separately. When installing a new glass, glass and gaskets are easily held in exactly the right place while the first clamp is put on and tightened. Pressure from each clamp



screw is distributed evenly over the entire area of contact between glass and clamp, so that it is impossible to exert too much pressure on any one screw. The clamps can be removed, a new glass and gasket inserted, and the clamps replaced in a fraction of the time necessary for changing a glass in a conventional gauge. The new Inferno "Clamp Type" Gauge has a wider, heavier glass than is used with the ordinary reflex gauge. This wide, heavy glass lasts many times as long as standard glass, and is particularly helpful when water conditions are bad.

The new gauge is made in navy bronze or stainless steel. The navy bronze used is classified in the A.S.M.E. code as composition "M". The navy bronze gauge, suitable for ordinary boiler service where corrosive conditions are not severe, is tested to 2,000 lbs. It is recommended for working pressures to 350 lbs. and for temperatures to 450° F. The non-corrosive steel gauge is tested to 2,500 lbs. It is recommended for working pressures to 1,000 lbs. and temperatures to 1,000° F.

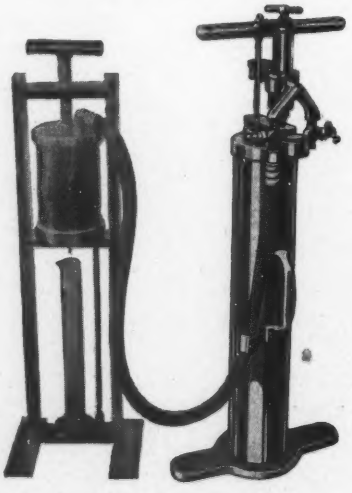
The manufacturer guarantees Inferno stainless steel fittings, available with either the bronze or the stainless gauge, never to break or twist off in the boiler, and authorizes supply stores to make good this guarantee. A patented shade for correct illumination can be had with the new gauge, complete with socket.

Bulletin No. 19, illustrating and describing the new gauge, and showing parts and prices, can be had at supply stores or direct from The Inferno Co., Shreveport, La.

New Air Pressure Pump Is Introduced by Baroid

With the introduction of the new Baroid Air Pressure Pump the Baroid Sales Department affords the operators who are drilling in remote districts the opportunity to make use of the beneficial Baroid Wall-Building Tester.

This Wall-Building Tester involves the compressing of the drilling mud at 100 lbs. pressure per sq. in. against a filtering medium and thereby obtaining a comparative determination of the thickness of cake formed on the walls of the hole and the amount of water lost to the formation. Cake thickness and water loss are influenced by the percentage and physical state of collodial material and amount of inert solids. Heretofore whether or not a mud would form a thin and impervious cake had to be determined by individual tests for the viscosity, gel-strength, sand and salt content, and percentage of solids. However, the Baroid Wall-Building Tester simplifies all this by providing a direct determination of the wall-building characteristics of a mud and consequent over-all evaluation of drilling mud. These facts are fully recognized throughout the oil drilling industry and to many men in charge of mud control the Tester has become an indispensable part of their equipment.



Baroid Air Pressure Pump

The Baroid Air Pressure Pump has been designed especially for supplying the air pressure for the Wall-Building Tester in remote regions or other cases where it is inconvenient or undesirable to use the standard cylinder containing 1800 lbs. of compressed air because facilities for refilling the cylinder are not readily available. With the Baroid pump it is merely necessary to work the pump for a minute or two and sufficient pressure will be built up.

It is constructed of light-weight but extremely tough molychrome steel and duralumin and has an attractive polished finish, which is non-tarnishable and rustproof.

The Pump is of the two-cylinder type and consequently requires only about two minutes of easy pumping to raise the pressure to 150 lbs. which is the maximum capacity of the pump. It will hold pressure sufficient to run the Baroid Wall-Building Tester for about an hour at 100 lbs. per sq. in. pressure without additional pumping.

The unit is equipped with a reservoir pressure gauge, a regulator to provide uniform working pressure at 100 lbs. per sq. in., a working pressure gauge, and a bleeder valve.

A durable hose is provided for ready connection to the Tester. All parts are readily replaceable at the Baroid Sales Department at 837 Jackson St., Los Angeles, Calif.

For greater portability in taking the Baroid Wall-Building Tester and Air Pressure Pump from well to well, a fitted kit is available containing all necessary accessories such as a 100 cc. graduate, package of filter paper, and a crescent wrench for assembling the equipment.

Griscom-Russell Bulletin

An interesting new bulletin on the well-known G-R Bentube Section has just been published by The Griscom-Russell Co. Some of the features of this bulletin are a full-page photograph showing scale which has been shed by the flexure of the Bentube elements during normal operation in actual service, photographs showing the contrast between the cold and hot curvature of the elements in a Bentube Section, installation views in the most modern designs of cooling towers and in condenser boxes, and graphic comparisons of Bentube Sections with other types of condensers and coolers.

Several pages in the bulletin are devoted to curves and tables of useful information for refinery engineers. Copies of the bulletin can be obtained by addressing The Griscom-Russell Co., 285 Madison Avenue, New York, and asking for Bulletin 1601.

Road Show Carries Sales Message To Tide Water Associated's Dealers

"Carrying the mountain to Mohammed" might well be the theme of Tide Water Associated Oil Co.'s annual sales promotion program, which for the past six years has taken the form of a complete dramatized production, transported as a road show to the company's district headquarters in the west.

Through the use of a special van, two tons of show material, including stage sets, motion picture and sound equipment, is transported to the district cities where meetings of more than 5,000 Associated dealers are held.

Headed by P. E. Allan, domestic sales manager, the touring "troupe" from headquarters includes sales and advertising executives. On the five weeks western tour this year, started March 6, aside from Mr. Allan, the group includes Harold R. Deal, advertising and sales promotion manager, Walter Brunn, merchandising manager, W. A. Reanier, white oil sales manager, E. C. Heinz, assistant white oil sales manager, F. L. Wager, manager of automotive oil and grease sales, J. Ransford, supervisor of sales training, B. W. Sears, advertising assistant and W. L. Doty, executive of Lord and Thomas advertising agency.

The sales meetings this year have been extended to include four additional districts. Starting at Fresno, the tour will reach San Jose, Los Angeles, Riverside, Phoenix, Ariz., San Diego, San Francisco, Oakland, Sacramento, Seattle and Spokane, Wash., Boise, Idaho, Portland and Medford, Ore.

Each sales meeting comprises three parts, the first session for district personnel and home office executives; the second, a night show, for all sales personnel, and Associated Dealers with the touring executives, and the third, a merchandising meeting for all personnel and dealers.

In each instance the meeting is handled and directed by the district sales manager, who presides at each of the three sessions.

The feature of the meeting is the dramatized presentation, a two hour stage performance in which the entire visiting group participates. A stage foreman and two technicians handle the mechanics of the show.

The presentation of the company's 1939 newspaper advertising, prepared in mammoth reproductions, comprises one of the outstanding features of this year's road show. Also emphasized will be the 1939 "Associated Stamps of the West" program and the special theme of this year's sales meeting "Deliver the Goods."

Motion picture showings will include a colorful film depicting a great number of motoring attractions of the west, such as Treasure Island, site of the San Francisco World's Fair, Boulder, Coulee, Bonneville and Shasta dams, and many other man-made and natural wonders of the western slope. How Associated Dealers can add to the enjoyment of the visitors will be graphically shown.

The presentation of advertising and sales promotion will be made by Harold R. Deal and W. L. Doty.

Night view of the new Tide Water Associated Oil Company's service station at Burlingame, California, showing the General Electric Fluorescent lights installed beneath the canopy and illuminating the tower which is surmounted by the company's "Flying-A" insignia, Neon outlined, and also used to outline the canopy and building.

January Gasoline Sales Show Sharp Uptrend

California gasoline sales continued to climb steadily, according to a report issued today by the State Board of Equalization.

On the basis of gasoline distributed during the month of January, the tax amounted to $3,976,767.03, as compared with $3,802,938.78 for the same month of the previous year. This represents a gain of 4.57 per cent.

The tax, according to R. E. Collins, board chairman, was assessed against the sale of 132,558,901 gallons of gasoline as against the 126,764,626 gallons sold in January, 1938.

Name	Gallons Actually Sold	Net Taxable Gallonage
Aromalene, Inc.	633,827	619,684
Bankline Oil Co.	459,350	None
Belridge Oil Co.	1,715,848	139,485
Brown, Henry, dba. operators Oil & Refining	675,337	675,337
Calif. Oil & Refining Co.	344,049	344,049
Caminol Co. Ltd., The	2,163,496	2,094,111
Century Oil Co.	1,195,528	1,035,545
Chanslor-Canfield Midway Oil	469,232	None
Coline Gasoline Corp.	1,123,092	None
Cowan Oil & Refining Co.	765,529	None
Del Rey Oil & Gas Co.	547,380	None
Eagle Oil & Refining Co., Inc.	1,742,097	1,742,097
East West Refining Co.	757,949	757,949
El Camino Refining Co.	1,264,523	1,252,743
Elm Oil Co.	391,109	391,109
El Tejon Oil & Refining Corp.	841,217	841,217
Envoy Petroleum Co.	763,185	763,185
Estado Petroleum Corp.	2,207,322	2,207,012
Exeter Refining Co.	808,125	808,031
F. R. Long, Inc.	1,178,418	None
Gen. Pet. Corp. of Calif.	27,142,846	9,290,206
Gilmore-Dabney, Inc.	486,063	None
Gilmore Oil Co.	5,609,445	49,507
Hancock Oil Co. of Calif.	3,821,892	2,515,482
Harbor Refining Co.	411,086	411,086
Honolulu Oil Corp., Ltd.	687,407	8,259
Kettleman Oil Corp., Ltd.	323,375	None
Krieger Oil Co.	583,645	609,753
Lomita Gasoline Co.	1,572,307	None
Los Nietos Prod. & Refing. Co.	3,027,098	703,418
Macmillan Petroleum Corp.	2,548,171	2,338,433
Maguire Oil & Refining Corp.	339,423	339,413
McCallen Refining Co.	853,867	853,867
Meek, Herbert A., dba. Henry H. Cross Co. of Calif.	597,496	None
Mercury Petroleum Corp.	481,721	481,721
Moffet, J. O., San Fernando Refining Co.	345,479	345,450
Mohawk Petroleum Corp.	4,380,288	3,857,098
Natural Gasoline Co.	481,204	None
Norwalk Co., The	1,870,333	1,448,040
O. C. Field Gasoline Corp.	2,148,780	195,573
O. F. Collinge, Inc.	599,202	None
Olympic Refining Co.	1,398,772	1,321,199
Pacific Western Oil Co.	394,281	999
Petrolane, Ltd.	389,261	236,922
Petrol Corp., The	1,422,252	678,502
Richfield Oil Corp.	14,261,624	11,240,755
Rio Grande Oil, Inc.	3,217,826	None
Rothschild Oil Co.	1,070,561	1,070,561
R. R. Bush Oil Co.	1,084,818	986,358
Seaboard Oil Co. of Delaware.	1,604,960	None
Seaside Oil Co.	3,414,400	1,302,876
Shell Oil Co.	27,308,535	13,695,134
Signal Oil & Gas Co.	1,371,502	None
Signal Oil Co.	4,870,401	None
Socal Oil & Refining Co.	769,217	751,742
Standard Oil Co. of Calif.	41,991,676	20,713,794
St. Helens Petroleum Co., Ltd.	1,287,345	1,287,260
Sunset Oil Co.	2,666,344	None
Superior Oil Co.	2,274,246	128,014
Texas Co., The	9,533,891	6,774,734
Tide Water Associated Oil Co.	27,417,674	13,276,520
Triangle Oil & Refining Co.	584,119	593,459
Union Oil Co. of California	20,669,259	12,676,683
West Coast Refining Co.	377,581	None
Western States Gasoline Corp.	3,879,476	152,777
Wilshire Oil Co., Inc.	8,485,861	7,829,985

Huge Petroleum Industry Exhibit Feature of Golden Gate World's Fair

Marvels of the modern age, from heating and lighting in a remote back-country home to the streamlined existence in a metropolis, are vividly portrayed in "The Story of Petroleum", the huge presentation of the Petroleum Exhibitors at the Golden Gate International Exposition.

The far-reaching story of oil, from its discovery to the unlimited uses of petroleum and its by-products today, is emphasized in the colorful, educational and entertaining presentation, made possible by the leading oil companies in the west.

Constructed at a cost of over $300,000, the largest industrial exhibit occupies 36,000 square feet of space in the Vacationland Building, directly off the central court of the Exposition which is dominated by the inspiring Tower of the Sun.

Much is to be seen and learned in the Petroleum Exhibit, both for the technician or layman, and for old and young alike. Transoramas, dioramas and three dimensional features deal with the geological and geophysical aspects, early to modern commercial production, storage, transportation, manufacturing, distribution and sales service. The contrast between the one or two first products of petroleum and the more than 800 in constant use today are visualized and told of through a combination of art, animation, lighting, sound, motion pictures and illusion.

One of the outstanding features of the exhibit is the fully operating model oil refinery. Constructed of glass, "Lucite" (a glass-like substance) and metal, the entire process of oil refining is clearly demonstrated. This model is built on exact scale, ½ inch to the foot, and covers an area of 540 sq. feet. Colored fluid and gases are used in simulating the actual refining operations.

Aside from color and sound motion picture showings, a unique theatre occupies a portion along one side of the exhibit. Here a puppet show is staged every hour, being played before enthusiastic audiences of several hundred men, women and children. In three lively acts, the show develops a subtle theme dealing with the gallonage, cost and taxation of gasoline to the consumer over a fifteen-year period.

Of particular interest is the Petroleum Home Exhibit, comprising an adobe home in which the many uses of petroleum products are artistically combined and demonstrated.

For the technically inclined and the mechanically-minded motorists, detailed displays of apparatus utilized in the laboratories of the oil industry in developing, testing and proving products, and the most modern equipment used in checking the efficiency of the motorcar, are operated in intimate exhibit rooms.

What modern instruments can do to perfect the operation of Mr. and Mrs. Public's motor car is clearly shown in the above display which is part of the Petroleum Exhibit at the Golden Gate International Exposition.

"The Story of Petroleum", from the discovery to the unlimited uses of petroleum and its by-products throughout the world today, is vividly told in this huge exhibit of the Golden Gate Exposition Petroleum Exhibitors, Inc., at the World's Fair on Treasure Island in San Francisco Bay. Visitors at this entertaining and educational exhibit, made possible by the leading oil companies of the west, are shown viewing some of the many interesting displays. Left center is the model oil refinery, while the replica oil derrick surmounts the monumental base at the center of the 36,000 square feet of exhibit space in the Vacationland Building.

New Asphalt Has No Pigment Coloration

Permanent colored guide lines for asphalt highways, better-quality asphaltic paints, and non-staining silk-covered shoes, are the first uses found for a new asphalt product which, until recently, could be produced only from petroleum found in an Egyptian oil field.

This latest development of the petroleum technologist, discovered in a laboratory accident, is an asphalt virtually without pigment coloration. Because of this unique quality, it permanently can be dyed to any desired color. Used without dye, it for the first time provides a practically stainless asphalt.

Several stretches of asphalt highway already have been marked with highly-visible aluminum-colored guide lines of this new material. The lines will last as long as the road surface itself, it is believed, thus eliminating the periodical application of painted lines.

Paint manufacturers also have found this new asphalt highly useful, since it assimilates colors so readily. Shoe manufacturers use asphalt as a binder, but on their expensive, light-colored silk and brocaded shoes the binders made of other asphalts often came through and stained the delicate fabrics. The new asphalt does not stain.

New "electric eyes" for highways flash danger signals to speeding motorists and test the purity of motor oil.

New Cementing Collar For Two-Stage Work

To provide for two-stage cementing jobs where the lower stage is above the shoe, a new design of float collar has been developed by Baker Oil Tools, Inc., of Huntington Park, California. This device is the Baker Duplex Cement Whirler Float Collar with Solid Bottom Baffle,

with Metal "Petal" Basket. Since it provides for placement of the cement through tubing or drill pipe, it is also particularly adapted to single cement jobs above the shoe where pressure is needed to break circulation or place cement without putting strain on the pipe. When a second stage of cementing is to be done above the collar, the new Baker Whirler Bridging Collar is placed in the string at the bottom of this upper stage.

As shown in the accompanying illustration, the Baker Duplex Cement Whirler Float Collar contains a ball type back-pressure valve which is embedded in a concrete plug that forms a solid baffle in the pipe below the valve. Leading off from the valve chamber are ports over the outer ends of which are baffle plates to direct fluid or cement slurry in a whirling motion as it is forced out of the collar. The valve cage extends upward to the top of the concrete plug where it is equipped with left-hand, square threads into which the cementing string is screwed.

The cementing is done through a string of tubing or drill pipe on the bottom of which is a Baker Circulation Joint and Bottom Sub, the latter having left-hand, square threads corresponding to those in the Duplex Collar. This cementing string is run in and screwed into the collar after the liner or casing has been landed in the well. Circulation is broken and the cement pumped down the tubing, being forced out the whirler ports by the solid baffle below the ports. As soon as the cement is in place the cementing string is unscrewed and removed from the well, being flushed out when disengaged to avoid any possibility of sticking.

For the second stage of cementing the Baker Whirler Bridging Collar is used. This consists of a whirler collar below which is a seat for a bridging ball. The seat is made of Bakelite and is embedded in a concrete plug through which is an opening large enough to pass the cementing string used to cement the lower stage. After the cementing string has been withdrawn upon completion of the lower stage, the bridging ball is dropped down the pipe and forms a bridge in the casing or liner, forcing the cement when pumped down, to pass out the whirler ports in the collar. Cement for this stage can be placed by the conventional plug method or by means of a Cement Retainer.

Both the Duplex Collar and the Whirler Bridging Collar are generally equipped with Metal "Petal" Baskets (and the top of the blank section of pipe being cemented frequently is equipped with inverted baskets) to protect the perforations and formations below and above the cement jobs. Complete details with illustrations showing the application of this equipment can be secured from Baker Oil Tools, Inc.

Fluor Corp. Acquires The Cooling Tower Co.

Of great interest to the industry is the recent announcement by The Fluor Corp., Ltd., Los Angeles, Calif., that it has acquired The Cooling Tower Co., Inc., of New York. The combined forces of these two pioneer water cooling equipment organizations offer the most complete service of its kind in their field.

For twenty years The Fluor Corp., Ltd., has been designing and building atmospheric cooling towers to satisfactorily meet the requirements of the oil, gas and allied industries. Since 1911, The Cooling Tower Co. has taken the lead in forced and induced draft cooling tower development and fabrication.

In speaking of the expansion of the Fluor organization, J. S. Fluor, Jr., vice president, said, "Both companies have long been established as leaders in cooling tower engineering and now the combined manufacturing facilities and personnel of these companies will offer, we believe, an unsurpassed water cooling equipment service to the industry."

No immediate changes are contemplated in the sales or distribution divisions of either company.

Fluor offices are maintained in Kansas City, Houston, Phoenix, Tulsa, New

P. E. Fluor, executive vice president above, and J. S. Fluor, Jr., vice president of The Fluor Corp. Ltd., who have just acquired The Cooling Tower Co., Inc., of New York City.

York and London. To these have been added the offices of The Cooling Tower Co., Inc.

Three Coast Men Placed On Waste Disposal Group

M. E. Brock, Gulf Oil Corp., Houston, has been appointed chairman of the American Petroleum Institute's Division of Production 1939 Committee on Disposal of Production Wastes. D. V. Stroop, Institute staff engineer, is secretary.

Membership follows: H. K. Arnold, Humble Oil & Refining Co., Houston; D. B. Dow, Indian Territory Illuminating Oil Co., Bartlesville, Okla.; E. M. Freeman, The Texas Co., Houston; **Fritz Karge, Union Oil Co. of California, Los Angeles;** and R. S. Knappen, Gulf Oil Corp., Tulsa.

Also, Glenver McConnell, Shell Petroleum Corp., Tulsa; A. S. Ritchie, McPherson Drilling Co., Wichita, Kans.; John A. Ritter, Sun Oil Co., Dallas; **J. Samuelson, General Petroleum Corp. of California, Los Angeles; G. O. Suman, Tide Water-Associated Oil Co., Oil Center, Calif.;** and William F. Taylor, The Carter Oil Co., Tulsa.

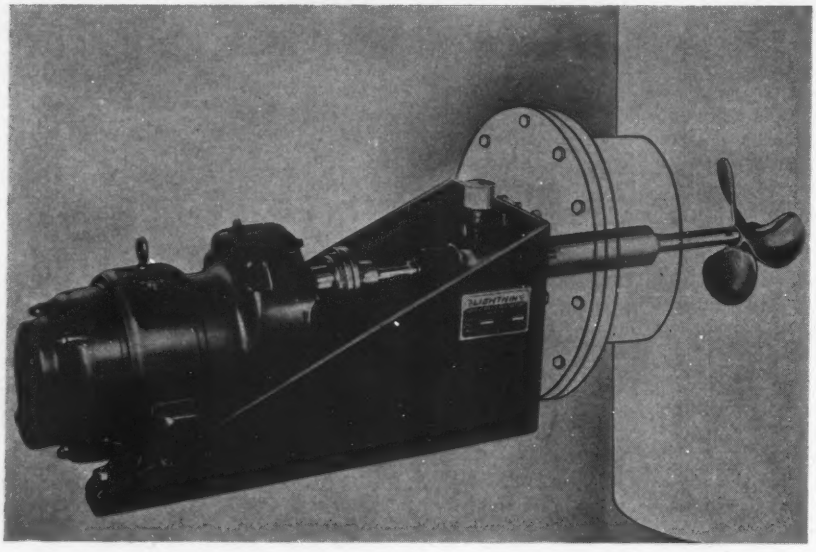
"Gushers" are gaudy, but uneconomical! They are passing from the modern oil field scene. Being wasteful of oil, they are regarded as accidents, the result of poor operating technique, or carelessness.

"Lightnin" Propeller Type Mixer Has Many Uses Around Refinery

Rated by its makers as "the most important mechanical adaption in refinery practice since the small turbine," the "Lightnin" Propeller Type Mixer is said to be justifying these claims under actual operating conditions.

Used in the refinery for gasoline blending and ethylizing, advantages over recirculation with pumps is claimed. As an example, the recommended procedure for ethylizing gasoline states that the contents of the tank should be recirculated at least 1½ times and that the pump used must be large enough to displace capacity of the tank in 15 hours. Until he installed a "Lightnin" Mixer, the practice of one refiner was to recirculate for 20 hours by means of a 10 H. P. pump. With a 3 H. P. "Lightnin" Side Entering Mixer, the same work was performed in 45 minutes—in 1/26 the time with 1/39 the power consumption. In another case a 20,000 bbl. tank is regularly blended to a uniform octane rating in 45 minutes with a 15 H. P., "Lightnin" Side Entering Mixer, it is said. In addition to the great savings in time and in power consumption evaporation losses were also reduced since the liquid surface was not violently disturbed. Vibration effects were also greatly reduced.

"Lightnin" Propeller Type mixing is also proving invaluable in lube oil blending. One refiner reports that a 20 H. P. "Lightnin" Side Entering Mixer is being used to blend 60,000 gallons of lube oil in only four hours. In other plants 7½ H. P. "Lightnin" Mixers are blending 10,000 gallons in twenty minutes. A further saving is effected through the "Lightnin" method in that all sampling other than the final check is eliminated because of the uniformity of "Lightnin" results. Under other methods continued test checks are necessary until desired viscosity is reached. With "Lightnin"



Mixers the mixers are run for a specified length of time and blending is then found to be complete. One sample only on completion of run is required. Uniform distribution of low percentage components, such as wax inhibitors, is also easily and quickly accomplished.

"Lightnin" Side Entering Mixers, manufactured by the Mixing Equipment Co., Inc., Rochester, N. Y., are now available for use on the largest tanks used today up to 110,000 barrels and are adaptable for installation on Horton Spheroids, and Pontoon Roof Tanks. Incorporating modern design, and soundly engineered for refinery service with special packing and lubricants, "Lightnin" Side Entering Mixers can easily be installed on existing tanks without expensive alterations. They are regularly equipped with explosion proof motors, and can be had with shafts and propellers of any specified materials to meet specialized conditions.

In addition to their use for gasoline blending and ethylizing and for lube oil blending, "Lightnin" Mixers will perform a multitude of other jobs in the refinery. They are also used for clay contacting, suspending lime, filter aid, acid contacting, cut back asphalt blending, regeneration of doctor solution, flash mixing, boiler feed water treatment, butane with gasoline, addition of dye, lube oil and inhibitor, medicinal oil blending, etc.

The reported success of the "Lightnin" method in supplanting other methods of mixing is attributed to the patented "Lightnin" off-center mixing action which assures a rapid bottom-to-top turnover of a tank's contents combined with an efficient rotary motion.

APPROXIMATE SIZE AND COST TABLE

Gasoline, Ethylizing & Blending
Blending time . . . . 45 min. to 2 hrs.
"LIGHTNIN" Side Entering Mixers

Standard 42 Gal.	Gallons	H.P.
10,000	420,000	10
20,000	840,000	15
30,000	1,260,000	25
40,000	1,680,000	40
50,000	2,100,000	50
85,000	3,570,000	75
100,000	4,200,000	100

These figures apply only to agitators as made by Mixing Equipment Company, Inc., and installed according to their directions, to give patented angular off-center position, producing double action mixing.

Correspondingly less H.P. required if more time is available for blending. Table above shows H.P. for maximum two-hour blending time for full tank.

Australia Favors Coast Oil Products

One of California's largest markets for automobiles, trucks, tractors, lubricating oil, naptha, diesel and fuel oil is Australia, the world's great wheat and wool producing country, where relations with America are increasingly friendly.

This is the statement of J. D. Rogers of Melbourne, listed among distinguished visitors in Los Angeles, who is here to confer with executives of General Petroleum Corp., marketers of Mobiloil and other products widely used in Australia. Mr. Rogers is sales manager in the Australian states for Vacuum Oil Co., associated with Socony Vacuum Oil Co., with which General Petroleum is also affiliated.

"Australia is motorizing and building new concrete and asphalt highways at a rapid rate," Mr. Rogers says, "her motor car ownership increasing about 7 to 10% a year, and her truck ownership gaining about 15% annually. One out of every nine persons in our country owns a car, the largest selling makes being those which also lead the field in America. Our car ownership totals 800,000.

"Gasoline, or petrol as we call it, averages in cost about one shilling, nine pence (42c) per gallon. In Australia about 75% of this product is dispensed through filling stations, but not many of them are operated under the exclusive control of individual companies, most of them being what we call split-pump. I am very favorably impressed with the splendid, high-type modern company stations which I see on every hand in California.

"Expansion of the diesel market in our country has been very rapid, many of our trucks, tractors and boats being equipped with diesel motors. For instance, of the 36,000 tractors in use, 6,000 of them are fueled with diesel. Our petroleum products are widely distributed through many bulk plants, 12 such terminals being maintained along the coast. To a number of these, cargoes are frequently discharged from oil tankers carrying your high-grade American products."

Standard of California Develops New Lubricant For All Types of Diesel Engines

After 10,000,000 test miles, over 400 times the distance around the world, and after 90,000 test hours, equal to 10 continuous years of testing, Standard Oil Co. of Calif., is announcing its New "RPM" DELO (Diesel Engine Lubricating Oil).

To meet all requirements of all Diesels, New "RPM" DELO possesses the following important properties as established by exhaustive field and laboratory research, Standard engineers says:

1. It prevents ring-sticking even under the most severe engine operating conditions.

2. It is non-corrosive to alloy bearings and is, therefore, suitable for use in all engines, regardless of bearing materials. New "RPM" DELO is highly recommended for engines employing copper-lead, cadmium-silver, Satco and similar types of bearing materials.

3. It reduces wear of cylinders, pistons and rings.

4. The compounding material used in New "RPM" DELO is a powerful anti-oxidant. Thus this lubricant is highly resistant to oxidation and deterioration.

5. In addition New "RPM" DELO'S compounding is stable in the presence of moisture and in storage.

6. Due to its great stability, New "RPM" DELO will reduce filter clogging to the very minimum.

7. This lubricant minimizes cylinder and ring wear in high temperature regions such as the tops of pistons. This is because of New "RPM" DELO'S unusual capacity to spread and lubricate hot metal surfaces instead of receding and leaving them dry. This vital property may well be described as "high engine film strength."

8. New "RPM" DELO protects all bearing surfaces, piston rings and cylinders during the critical breaking-in period.

Stopping Ring Sticking

The combination of high operating temperatures and heavy fuels causes deposits of gum-like materials to form on piston rings, ring lands and piston skirts. These deposits eventually cement the rings in their grooves. The stuck rings are thus unable to seal air under compression and combustion gases above the piston in the combustion chamber. This causes increased blow-by, loss of power, and high oil consumption.

Some of the anti-ring sticking tests used in developing New "RPM" DELO are among the most severe yet devised. Test engines of all speeds are used. Some are mounted in hot boxes to approximate operation in desert heat. Others are operated at low temperature to make sure that New "RPM" DELO's anti-ring sticking compound will remain in the oil and do its job all the time. In addition water is added to the crankcase of these engines every 20 hours to approximate the most severe operating conditions in the presence of moisture.

Former anti-ring sticking compounds which solved one Diesel lubrication problem seemed to aggravate another. This called for more research, more thousands of hours of field and laboratory tests. The final result, Standard's engineers say, is New "RPM" DELO, using a strongly anti-oxidant compound to prevent ring sticking which is also non-corrosive to alloy bearings.

After punishing engine tests this product leaves copper-lead and cadmium-silver bearings in perfect condition.

Engine Wear Reduced

Careful observation in laboratory and field tests show that the greatest Diesel engine wear occurs at the top of the cylinders or cylinder liners. In fact, ordinarily the economic life of a Diesel depends on the wear at this particular point. Cylinders are worn tapered and thus the efficiency of rings in sealing compression and combustion gases is impaired.

With respect to the amount of wear that cylinders may undergo without serious trouble, it is interesting to note that the service department of a large Diesel tractor company recommends the replacements of cylinder liners when the wear at the top of the liners exceeds .010 inches to .012 inches.

In measuring top cylinder wear Standard Oil Lubrication Engineers were particularly careful. Special micrometers with verniers reading to the nearest 0.0001 inches were used. Even with such "super-careful" measurements, New "RPM" DELO appears outstanding in maintaining low engine year. In actual engine tests its wear rate was as low as 0.0005 inches per one thousand hours, the engineers report.

However, in measuring cylinder wear, low temperature engine operation as well as high heat operation is necessary. At low temperatures wear is almost invariably high, due to the fact that dilute carbonic and other acids formed by condensation of the products of combustion corrode the engine parts. New "RPM" DELO's cold test schedule called for unusually severe conditions. Test engines were operated at a temperature of but 80° F. at all times. Here again this new all-purpose Diesel lubricating oil established a very low wear rate, the engineers report.

Smooth Break-Ins

The break-in problem is particularly severe because the Diesel cycle requires that compression pressures (and temperatures) in the cylinders be sufficiently high to cause spontaneous combustion of the fuel at the time of injection. For this reason a Diesel engine, even under idling conditions, operates at high pressures.

Naturally, proper breaking-in of Diesels is vitally important to their future operation. The smoothness of the frictional surfaces obtained during breaking-in and early operation may determine the useful life, oil consumption and power characteristics of an engine.

The breaking-in lubrication afforded by numerous Diesel lubricating oils was rigorously tested under the "one hour break-in and high load test" of a prominent Diesel engine manufacturer. Before Standard Oil engineers were satisfied with the performance of New "RPM" DELO a special and more severe test was developed. No scratching of rings, piston lands and piston skirts occurred in this or other tests under the same schedule with New "RPM" DELO.

Less Filter Clogging

On analysis the material which clogs Diesel filters has been found to consist of oxidation products, iron, silica and water. A lubricating oil can reduce filter clogging by (1) maintaining piston rings in free working condition. Thus engine blow-by and the quantities of dust, iron and carbon entering the crankcase by way of the cylinders are reduced to a minimum; (2) minimizing oxidation of the crankcase oil itself to a minimum. In one drastic test, where uncompounded mineral oil caused filter clogging in 204 hours of engine operation, no restriction of oil flow occurred in 1234 hours on New "RPM" DELO.

Resistance to Oxidation and Moisture

Resistance to oxidation is best measured in laboratory machines. The Oxidation Test, to which New "RPM" DELO was subjected, consists of air-blowing oil samples for 72 hours at 300° F. in the presence of cadmium-silver and copper-lead strips which act as catalysts and increase the severity of the test.

The newly developed compound used in New "RPM" DELO is a powerful anti-oxidant. Therefore, this lubricant resists oxidation or breakdown in operation to a remarkable degree. In Oxidation Test runs New "RPM" DELO remained almost as clear after test as before.

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Oil Men's Calendar

C.N.G.A. Meeting First Thurs. Each Month.

April

3-7—American Chemical Society, Baltimore, Md.

24-29—Oil World Exposition, Inc., Houston, Texas.

11—AMERICAN PETROLEUM INSTITUTE, DIVISION of Production, Pacific Coast District, Biltmore Hotel, Los Angeles, Calif.

24-29—Oil-World Exposition, Inc., Houston, Tex.

26-28—American Institute of Mining & Metallurgical Engineers, Open Hearth Conference, Cleveland, Ohio.

May

3-5—Natural Gasoline Assn. of America, Tulsa, Okla.

9-11—American Institute of Chemical Engineers, Akron, Ohio.

15-18—AMERICAN PETROLEUM INSTITUTE, 9th Mid-Year Meeting, Roosevelt Hotel, New Orleans, La.

21-25—National Assn. of Purchasing Agents, Annual Convention, (Oil Company Buyers' Group), Fairmont Hotel, San Francisco, Calif.

22-June 8—World Automotive Engineering Congress, sponsored by S.A.E. for New York (May 22-26), Indianapolis (May 30), Detroit (May 31-June 2), San Francisco (June 6-8).

Richfield Oil Corp. engineers are here preparing for a road test. The different brands of gasoline are known by numbers only.